The Doe Run Herculaneum Smelter

Transportation Plan and Materials Handling Plan

THE DOE RUN COMPANY

Herculaneum, Missouri

BARR

Revised May 2002

Amended June 2002

Revised March 2003

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1.0 Executive Summary

The Doe Run Company's Herculaneum facility processes or smelts raw lead-bearing concentrate along with other metallurgical reagent materials into useable lead alloys. The safety and health of employees, residents of Herculaneum, and protection of the environment are most important to Doe Run while providing essential products. The company is committed to keeping its operations and surrounding community clean and safe.

Doe Run already has procedures in place to minimize potential migration of lead-bearing materials from the plant. These procedures have been re-evaluated as part of the development of The Doe Run Herculaneum Smelter Transportation Plan and Materials Handling Plan.

This plan incorporates an explanation of existing procedures and new plans for additional control measures to reduce the potential impact the facility has on human health and the environment. The plan addresses two major areas of concern: 1) transportation to and from the facility that has the potential for releasing lead to the surrounding area and 2) materials handling within the plant that has the potential for generating fugitive emissions.

The transportation plan is organized into three sub-plans; transportation by truck, rail, and barge. The transportation plan identifies the inbound and outbound materials, followed by existing and proposed structural controls and best management practices to control the potential release of lead-bearing materials during transportation. The materials handling plan describes material management within the plant and plans to control potential fugitive emissions. Each plan specifies additional proposed structural controls and/or best management practices where appropriate and necessary. All identified best management practices, or their equivalent, will continue to be implemented during plant operations. Schedules are provided for the implementation of proposed structural controls and best management practices. The schedules are tentative based on necessary approvals; time estimated for design, purchases and construction; plus other factors that may be beyond the control of Doe Run.

This revised plan includes:

1. Designation of "red" and "green" zones within and around the plant.

2. Establishment of an all-weather truck-wash facility.

3. New in-plant road for vehicles exiting the red zone.

4. Establishment of powerwash truck cleaning stations and revised truck traffic patterns.

5. New lead-concentrate truck unloading station.

6. Covered dross storage.

7. Wetting system for materials handling.

8. Materials storage and handling procedures.

9. Secure covers for railcars.

Areas within and adjacent to the plant are classified as "red" or "green" zones. The "red" zones are inside the plant and are considered to have the highest potential to be contaminated. "Green" zones are external to the lead-bearing materials handling areas and are considered to have the least potential to be contaminated. Transition areas between the "red" and "green" zones are designated as "blue" zones and are truck and/or equipment cleaning areas and are shown as dark blue on the figures.

All truck traffic that has been within the "red" zone will be cleaned prior to transitioning into the "green" zone. The paved areas and roadways within the "red" zone are cleaned on a daily basis with wet sweepers and other cleaning methods. The designated roads within the "green" zone will be cleaned with a dry vacuum sweeper on a daily basis to keep the road surface clean. Utilization of alternate inbound and outbound routes to the plant is also being evaluated in an effort to minimize or eliminate truck traffic through residential areas. Furthermore, traffic patterns have been altered to prevent vehicles that have been washed from crossing paths with vehicles that have not been washed.

The materials handling plan has been developed to minimize the storage of lead-bearing materials outdoors, and where outdoor storage is required (or necessary) implement controls to minimize the potential for fugitive emissions (blowing airborne dust and particles). The Company's goal is to have all lead-bearing materials that have the potential to generate dust stored within buildings or covered containers.

Doe Run is diligently working to implement rail transportation of lead concentrate. Barge transportation of lead concentrate or other lead-bearing materials is not currently in use, nor are there plans to utilize barge hauling of concentrate in the immediate future. The barge transportation plan

will be updated and incorporated in this overall plan prior to the use of the barge unloading facility to transfer lead concentrate or lead-bearing materials.

Development and implementation of the transportation and materials handling plan is one of many steps Doe Run has taken recently to address offsite migration of lead-bearing materials and to minimize the tracking of lead from the plant.

Doe Run intends to implement an ISO 14000 environmental management system at the Herculaneum facility by May 2004 and is fully committed to the successful implementation of this transportation and materials handling plan. The Doe Run environmental management team will review this plan annually to determine its effectiveness, identifying areas that could be improved and new activities that should be included in this plan.

As previously stated, Doe Run will continue to explore and, when appropriate, recommend additional measures that will minimize the impact of its operations on the surrounding community of Herculaneum.

2.0 Introduction

To better control traffic flow and identify risk of lead tracking in various areas of the plant, Doe Run has divided the facility into colored zones. (The general layout of the Herculaneum Smelter is shown in Figure 1.) The plant and the adjoining area is subdivided into red, and green zones depending on the area's potential for lead contamination as illustrated on Figure 2, with the red zone as the area with the highest potential exposure.

Because Occupational Safety and Health Administration (OSHA) regulations are applicable to the Herculaneum facility, personnel working in the red zone are required to meet specific OSHA training, testing, and personal protective equipment (PPE) requirements. Doe Run personnel operating the truck-wash areas are considered to be outside the red zone. Level C protection, hardhat, steel toe boots, safety glasses, and Doe Run issued coveralls with a standard half or full air purifying respirator or a powered air purifying respirator is the standard level of protection inside the red zone. All employees working within the red zone are required to change from their street clothes into work clothes provided by Doe Run in the clean locker room. When employees leave work, they turn in the work clothes for laundering by Doe Run and are required to shower prior to changing back into their street clothes.

In addition to employee protection procedures, protocols have also been developed for vehicles entering and leaving the red zone. There are three points of access into the red zone as illustrated in Figures 1 and 2. These points of access are the main entrance, the concentrate / south storage area entrance, and the east storage area entrance. Each of these entrances has a vehicle wash/cleaning station for vehicles and equipment. All vehicles, except for over sized vehicles, will transition out of the red zone through the enclosed vehicle wash. Oversized vehicles, i.e. cranes, loader, haul trucks etc. will be washed at one of the wash stations prior to exiting the red zone. Information regarding structural and nonstructural control measures for each transition area is provided in Section 3.1.

The transportation plan identifies the materials brought into and out of the plant and their methods of transportation, and addresses controls and measures for minimizing the potential for tracking or spilling lead onto the public roadways. The materials handling plan identifies relevant materials handled within the plant and addresses controls and measures for minimizing the potential for fugitive emissions associated with storage and movement of lead-bearing materials within the plant. Proposed structural controls and best management practices to minimize potential for tracking and fugitive emissions of lead are included in the plan. All identified best management practices, or their

equivalent, will continue to be implemented during plant operations. Some of the terms used in the plans can be found in the glossary included as Appendix A.

In the future, The Doe Run Company, through its continuous improvement measures to reduce lead releases from the smelter, may submit changes in best management practices or structural controls. Work procedures are being written or revised by The Doe Run Company, and reviewed to conform to ISO 14001 standards and the transportation and materials handling plan. Doe Run plans to implement ISO 14001 by May 2004. The current work procedures and records/certificates used by Doe Run have been included in Appendices B and C. In the case of any discrepancies between the work procedures and the transportation and material handling plan, the transportation and materials handling plan will take precedence.

3.0 Truck Transportation Plan

3.1 Plant

Currently all inbound and outbound trucks transporting lead-bearing materials to and from the plant are required to follow one of two designated road systems through the town of Herculaneum. Doe Run, in agreement with the City of Herculaneum and MDNR, will maintain two routes to the plant through the city in order to spread out the truck traffic and prevent routing all of the tractor-trailer truck traffic over one road. The designated routes start at Highway 61/67 (Commercial Blvd.) and proceed east to the plant as shown on Figure 3. The first designated route starts from Highway 61/67 and proceeds along Joachim Avenue to Main Street and on to the plant. This is the route used by trucks hauling lead and lead-alloy product from the plant. The second designated route starts at the intersections of Highway 61/67 and Joachim Avenue and proceeds along Joachim Avenue to Brown Street, to Station Street, to Main Street at the plant. This route is the designated primary route for trucks hauling lead concentrate from the mine/mill facilities to the smelter. During periods of high water, the bridge across Joachim Creek may be closed, and the first designated route (Hwy 61/67 to Joachim Avenue to Main Street to the plant) is used as an alternate ore concentrate truck route. MDNR is evaluating Doe Run's alternate haul route proposal for truck traffic through the residential area of Herculaneum. MDNR has decided to postpone the designation of the haul route based upon the results of the voluntary residential property purchase program. The Doe Run Company has sent a letter to Coleman Trucking, contract hauler of lead concentrate, requesting that they direct all of their drivers to maintain speeds along the designated routes through Herculaneum at least 5 mph below the presently posted speed limit. Doe Run has also requested by letter to the City of Herculaneum that the speed limits along the designated haul routes through Herculaneum be lowered by 5 mph for all trucks over 15 tons gross vehicle weight. The letters were sent prior to May 31, 2002.

The Doe Run Company has proposed alternative haul routes that would allow for plant traffic to travel to and from the smelter, while minimizing the exposure of Herculaneum residents (see Section 3.1.4.2). The Doe Run Company also supports the City of Herculaneum in its efforts to gain funding for a new bridge across the Joachim on the south end of town. An application for funding has been prepared by the City, and Doe Run has sent a letter to the Mayor stating our commitment to grant an easement across Doe Run property for the access road and bridge, supply and assist in the placement of slag for road bed and assist in making necessary repairs to the old bridge. This will allow all truck traffic, including lead-concentrate trucks, to access the plant without impacting the residential areas

of Herculaneum. A description of lead-bearing and nonlead-bearing materials that enter and exit the plant by truck transport is provided below. The locations of the deliveries can be found in Figures 1 and 5.

3.1.1 Inbound Materials

3.1.1.1 Lead Concentrate and Lead-Bearing Materials

Lead Concentrate: Ore-containing lead is concentrated at the Southeast Missouri Mining and Milling (SEMO) facilities. The lead concentrate contains approximately 75 to 80 percent lead with a moisture content of approximately 7 to 8 percent. As a result of the concentrate being damp, it cakes together, which reduces the potential for the concentrate to create an airborne dust.

The SEMO facilities have developed and submitted a Transportation Plan for Lead Concentrate which details the procedures and practices used to minimize the migration of lead concentrate from the facilities as a result of material handling and hauling. This Plan has been submitted under separate cover.

The concentrate is hauled from the mine to the plant by tractor-trailer. The trailer units are open-top end-dump box units. The trailers are securely covered with non-porous tarps in good condition. The tarps extend over the sides and ends of the trailer and are tightly strapped in place, thereby providing a tight cover over the box unit. Each of the trailers have been fitted with wing-nut latches and seals on the tailgates to prevent the tailgate from bouncing open during transit and prevent leakage respectively. Doe Run will evaluate, with the carrier, a soft rubber seal. If this or other seals and/or sealants are found more effective, Doe Run will ask EPA for approval. If during the inspection of the trailer at SEMO or Herculaneum any deficiencies are noted, the truck will not be allowed to load until repairs or modifications have been made. Because of the high density of the lead concentrate, the weight limit of a loaded trailer is reached before the volume capacity of the trailer if fully used. Typically, the loads occupy only about 25 percent of the total volume of the trailer, reducing the potential for concentrate spillage along the tarp-trailer interface during transport and the tarp installation/removal activities.

Approximately 230 trucks per week are received at the Herculaneum smelter at the current production rate of 155,000 tons per year. Approximately 320 trucks per week would be received at the maximum production rate of 250,000 tons per year. Concentrate trucks are normally received between 6 a.m. and 6 p.m., Monday through Friday. All concentrate trucks are unloaded at the concentrate truck unloading facility north of the strip mill building (see Figure 1).

Doe Run inspects 100 percent of the lead-concentrate trucks to ensure compliance with tarp usage and sift-proof trailer requirements. This inspection is performed at the concentrate loading and unloading stations and documented using the Bulk Truck Inspection Sheet. An example of the inspection sheet has been included in Appendix C. The inspection form must be completed and signed by a Doe Run representative before the empty concentrate truck can leave the plant.

This form will be updated at its next printing to include inspection of the trailer bed while it is raised. Until the next printing, a handwritten note will be made on the existing form verifying an inspection of the bottom of the trailer. Any sifting of the concentrate through a hole in the bed of trailer would show up as black streak on the outside of the trailer. Any trailer not meeting the sift-proof requirements will immediately be taken out of service.

The SEMO mine facilities provide an initial inspection of the trailer prior to loading with concentrate. This inspection includes condition of the trailer bed and tarping of trailer. These procedures are included as part of the SEMO facility's Transportation Plan for Lead Concentrate. A SEMO representative and the truck driver must complete and sign the form before the truck leaves the site.

All end-dump trailers hauling lead concentrate or lead-bearing materials are decontaminated prior to hauling nonlead-bearing materials or upon removal from service.

Lead-Bearing Materials: Non-bulk lead-bearing materials consisting of glass, circuit boards, blast grit, brass buffings and other electronic components containing lead are delivered by truck to the plant and are packaged in sift-proof cubic yard boxes, super sacks, and 55-gallon drums. These materials are delivered at the strip mill building truck dock and unloaded. The delivery trucks do not enter the red zone. The lead contained in the these materials is encapsulated or otherwise packaged in a form that is more easily managed and presents little potential for contributing to fugitive emissions of lead, or negatively impacting human health or the environment. Doe Run personnel and equipment transfer the pallets and palletized materials onto a box railcar at the strip mill siding. The Doe Run Company rail engine moves the railcar to the south storage area outside dock where the material is unloaded, unpackaged, and stored in the south storage area until used in the smelting process. Palletized fine or siftable materials that have the potential to generate fugitive dust emissions when unpackaged are transferred directly from the box railcar to the railcar unloader area. The palletized material is unpackaged and the contents fed directly into the north side of the railcar unloader. The associated packaging is then recycled as a flux in the dross kettles.

Doe Run receives bulk lead-bearing flux material at the plant. The material consists of either firing range soils with bullets or leaded glass. The lead within the bulk material is either lead bullets within the soil or else encapsulated within the glass. The trucks enter the red zone of the plant through the south plant entrance and unload the material on a storage pad in the south storage area. These trucks present a moderate to high potential for tracking lead or lead-bearing material from the plant.

3.1.1.2 Nonlead-Bearing Materials

The primary concern with inbound nonlead-bearing materials is the truck traffic in and out of the plant and the potential for tracking lead offsite. As part of the effort to identify and manage the overall plant traffic, this section identifies inbound nonlead-bearing material deliveries and their associated potential for tracking lead is estimated based on the areas of the plant where the delivery is made.

Oxygen

Liquid oxygen to supplement onsite production is delivered to the plant by truck. The trucks are brought in the front gate and directed through the main yard to the liquid oxygen storage tanks. The oxygen tanks/production tanks are located near the front entrance but within the red zone, just east and south of the store room/main shop building (see Figure 1). Approximately four to five bulk oxygen deliveries are made to the plant per month, and these deliveries present a low to moderate potential for tracking lead-bearing materials (see Figure 1).

Fuel Oil

Fuel oil, primarily diesel No. 2, and gasoline are delivered to the plant by truck. Approximately 12 trucks per month are delivered between 7 a.m. to 7 p.m., Monday through Friday. The delivery truck fills storage tanks within the red zone in the plant. Fuel oil delivery truck traffic presents a moderate to high potential for tracking lead-bearing materials.

Coke

Coke and coke breeze, a by-product carbon material from petroleum refining. Carbon is a metallurgical component as well as a fuel source. The current vendor used by Doe Run delivers approximately 45 truckloads of coke and 16 truckloads of coke breeze per month to the plant between 7 a.m. to 7 p.m. This material is delivered to the plant and is routed directly to the storage areas on the north end of the plant (see Figure 5). The storage areas are within the red zone of the plant, and the delivery trucks present a moderate to high potential for tracking lead-bearing materials.

Fluxes and Substitutes

Fluxes and substitutes (limestone, sand, and additional coke material) that are used in the smelting process are stored at the north end of the plant. Iron mill scale is delivered to the south storage area. These vehicles present a moderate to high potential for tracking lead-bearing material.

Construction Materials

These materials will be brought in and delivered to a transfer station or staging area as appropriate. The location for unloading will be selected by Doe Run personnel on a case-by-case basis. Materials will be unloaded within the green zone whenever possible, however in some cases it may be necessary for the delivery trucks to enter the red zone to be unloaded. Construction delivery truck traffic presents a low to high potential for tracking lead-bearing materials depending on the area of the facility the truck must travel.

Supplies

Miscellaneous general consumable supplies (e.g., oxygen/acetylene tanks approximately 4 times per month and large parts/equipment) may be delivered to the plant from 7 a.m. to 3 p.m. It may be necessary for the delivery truck to transport these and/or other miscellaneous supplies into the red zone. Tracking issues associated with these deliveries will depend on the area of the plant where the delivery is made, and in general, present a low to moderate potential for tracking.

3.1.2 Outbound Materials

3.1.2.1 Lead Products

Refined lead and lead alloy is the finished product manufactured by the plant facility. The products shipped out of this facility are in the form of lead ingots, bars, and sheets of various sizes and weights. The ingots and bars are shipped from the refinery dock and the lead sheets are shipped from the lead strip mill building (see Figure 1). There are approximately 630 trucks per month shipped out of the plant at the current production rate of 155,000 tons per year. There could be approximately 950 truckloads of lead products shipped out of the plant at the maximum production rate of 250,000 tons per year. Both of the areas for truck loading of lead products are within the current green zone and cleaning of the trucks is not required. The trucks bypass the plant proper and remain on Station Street and the East Road portions of the facility. The trucks are loaded at the refinery dock and leave on the same streets, never coming into the plant proper.

3.1.2.2 Smelter By-Products

There are three main smelter by-products; kettle dross, silver-rich lead-zinc drosses, and sulfuric acid. Kettle dross is a granular lead and copper-bearing product. There is approximately 600 tons of kettle dross produced by the dross plant per month. The dross plant separates copper rich dross from rough lead bullion. The copper rich dross is transferred to the new dross building at the north end of the plant, (formerly the old zinc building) and is sold as a raw material. After the separation process, dross that is low in copper content is recycled back into the process (see Figure 1). There are 30 to 60 truckloads of copper rich dross loaded per quarter from the dross building and shipped offsite. The dross hauling trucks present a moderate to high potential for tracking.

Silver dross products are small in volume and are cast into ingots. The ingots are shipped in covered trailers from the refinery dock and are similar to lead alloy products in how they are handled. The trucks hauling the silver dross ingots remain within the green zone, and therefore present no/low potential for tracking.

The sulfuric acid by-product is shipped offsite by truck, rail and barge. If trucks transporting sulfuric acid offsite enter the red zone, they are considered to have a low to moderate potential for tracking of lead (see Figure 1).

The silver dross products and sulfuric acid trucks bypass the plant proper and remain on Station Street and the East Road portions of the facility. The trucks leave on the same streets, never coming into the plant proper.

3.1.2.3 Waste Materials

Nonhazardous

Regular trash, demolition material, and other miscellaneous wastes are hauled from the facility within 7 a.m. to 7 p.m., Monday through Friday. Trash dumpsters are located at various points throughout the plant, some of which are located within the red zone. Any truck, which enters the red zone, must exit through the enclosed vehicle wash station and then proceeds on Station Street or Main Street on the way out of Herculaneum. Doe Run has moved that receptacle to a green zone, which has reduced its potential to essentially zero.

Hazardous, Special, and Biological Waste

The primary waste generated by the smelting process itself is the replacement of the refractory materials, which are classified as hazardous waste due to Resource Conservation and Recovery Act

(RCRA) metals. Spent refractory materials are shipped offsite as a hazardous waste to a permitted facility that stabilizes and disposes of the waste in a hazardous waste landfill. The medical facility onsite generates some biological materials that are disposed of in accordance with appropriate regulatory requirements. Truck traffic associated with removal of special, biological, and hazardous waste that enters the red zone represents a moderate to high potential to track lead.

3.1.3 Existing Structural Controls

As depicted on Figure 2, the roadways within and adjacent to the plant are classified as within red or green zone. The red roadways are internal to the plant and are considered to have the highest potential to be contaminated. All truck traffic within the red zone will be cleaned at the wash station prior to leaving the plant. All roads within the green zone are external to the lead-bearing materials handling areas and are considered relatively clean when compared to red zone roads. Transition areas between the red and green zones are designated as dark blue zones and are truck and/or equipment cleaning / wash areas. Entrances to the red zone are restricted by fencing, and barriers except for three gates. As shown on Figure 1, the three points of entry to the red zone are the main, south storage / concentrate unloading area, and east storage area entrances. Each entrance/exit has a decontamination station for equipment or vehicles departing the potential high lead area. Currently portable pressure powerwash systems are used at the three entrances. The concentrate truck unloading facility has eliminated the need for concentrate trucks to enter the south storage area, significantly reducing the effort required to clean the concentrate trucks. Existing structural controls associated with these areas are described in Section 3.1.3 and proposed structural controls are described in Section 3.1.4.

3.1.3.1 Main Entrance

This entrance has a gate to prevent unauthorized entry and exit and is monitored by plant security. The main entrance outside of the gate and immediately inside the gate is considered a clean area and part of the green zone. A portable pressure powerwash is used to decontaminate vehicles that must exit the plant through the main gate (see Figure 2). Rinse water from this cleaning area flows towards the interior of the plant away from the clean area, and it is collected in the plant's wastewater treatment system. These vehicles are personally checked by the security guard on duty before being allowed to exit through the main gate.

3.1.3.2 South Storage Area Entrance

A portable pressure washer is located between the south storage area entrance and the concentrate truck unloading facility (see Figure 1). This portable pressure washer is used to wash the backs of the concentrate trucks and vehicles exiting the south storage area prior to exiting through the enclosed vehicle wash. Wash water from this area is directed to a collection sump using the natural slope of the area as well as asphalt berms. The collected water is pumped back to the facility's wastewater treatment system. Vehicles exiting from the south storage area are washed and inspected by the same person that washes the lead concentrate haul trucks.

3.1.3.3 East Storage Area Entrance

A temporary portable powerwash station has been located in the Refinery Dock parking lot to clean all trucks leaving the east storage area. All wash water is collected and routed to the plant's wastewater treatment plant. The east storage area is within the red zone.

3.1.3.4 Concentrate Truck Unloading Station

The concentrate truck unloading facility was designed to reduce potential tracking issues associated with concentrate trucks entering the red zone to unload (see Figure 1). The unloading station is a combination decontamination pad, elevated unloading dock, and concentrate temporary storage bin. The temporary storage bin at the end of the unloading station is open on the east side for access by front loader or excavator and has an open-pipe platform with a concrete curb stop across the top of the temporary storage bin. This serves as the unloading dock and the rear most wheels of the trailer are placed on the open-pipe platform prior to opening the trailer tailgate. The end-dump trailer is then tipped and concentrate is unloaded off the east end of the unloading station into the temporary storage bin. The open-pipe platform unloading dock prevents spillage, and thus tracking of concentrate onto the hard surface ramp of the unloading station. A concrete ramp that serves as a decontamination pad slopes away from the unloading dock to an open-grate drain at the west end of the unloading station. The drain is part of the plant's wastewater collection system. After unloading, the trailer is moved slightly forward to the west end of the decontamination pad near the open-grate drain for wash down with a mobile pressure powerwash system.

The following procedures are employed to ensure that the concentrate trailer and unloading station have been adequately cleaned after each unloading operation:

1. Only one truck at a time will be allowed to unload.

2. The truck will be backed onto the unloading station until the rear most trailer tires are on the middle pipe of the unloading dock.

3. The safety latches on the tailgate will be opened, the end-dump trailer will be tipped and the concentrate will be unloaded into the temporary storage bin.

4. After the load has been unloaded, any remaining lead concentrate inside the tailgate seal area will be removed by scraping and/or air brushed off prior to closing the tailgate. The tailgate will be closed and secured with the trailer tailgate air locks prior to moving the trailer forward until the rear axles of the trailer are at the west end of the decontamination pad near the open-grate drain.

5. The rear of the trailer will be thoroughly washed with the pressure powerwash system. This wash shall include the tailgate, accessible undercarriage axles, wheels, tires and mud flaps.

6. Prior to leaving the unloading station, the concentrate truck and trailer will be inspected and certified to be adequately clean and road ready with completion and sign off of the inspection sheet contained in Appendix C. A Doe Run Company employee or contractor will conduct the inspection and certification.

7. The decontamination pad will be thoroughly washed with the pressure powerwash system or fire hose.

The rear wheels and rear area of the trailer is the only part of the concentrate hauling unit that has the potential for contamination as a result of unloading concentrate at the concentrate truck unloading station. Therefore the cleaning effort concentrates on this area. Because the tires and undercarriage of the truck are not exposed to the concentrate at the plant the decontamination requirements are significantly reduced and the potential for tracking lead is minimized. Truck cleaning procedures are addressed under the description of best management practices.

The concentrate typically contains 7 to 8 percent moisture. At this moisture content, the concentrate cakes and is not easily carried away in windy conditions.

3.1.3.5 Road Surfacing

The green zone roads have been paved with either asphalt or concrete to facilitate maintenance, cleaning, inspections, and spill cleanup. The plant's interior, most heavily traveled roads are also paved with asphalt or concrete. The east storage area roads consist of crushed rock. The East Road

was paved and added to our sweeping schedule in the fall of 2001 reducing the potential for tracking lead onto the streets. At the same time the east exit from the plant onto the east road was blocked and the only traffic on the East Road is trucks hauling lead product or traffic to the east storage area. Any traffic coming out of the east storage area must be washed at the east gate wash area before traveling on the East Road.

3.1.3.6 All-Weather Vehicle Wash

The Doe Run Company has installed an all-weather vehicle wash. The all-weather wash is able to accommodate tractor-trailer units and smaller vehicles and is capable of operating during freezing weather conditions. All lead concentrate haul trucks and vehicles exiting the red zone will be washed at the all-weather vehicle wash facility with the exception of oversized vehicles. All vehicles hauling lead concentrate and all vehicles that enter the red zone must exit through the all-weather vehicle wash facility and then proceed onto Station Street or Main Street on the way out of Herculaneum.

3.1.4 Proposed Structural Controls

The following structural controls are either currently being evaluated to determine their feasibility, are proposed to be implemented, or are contingency alternatives in the event existing control measures are insufficient.

3.1.4.1 Red Zone Exit

Doe Run will route all vehicles, including tractor trailer/ end dumps, ~~entering~~ EXITING the red zone through a single all-weather vehicle wash located in the southwest corner of the plant (see Figure 1a and 2a.). Vehicles exiting the red zone will travel behind (east of) the change house building and around the acid tank, past the concentrate unloading station and along a new road to be constructed east of the strip mill building connecting with Station Street near the all weather vehicle wash facility . The portion of the route from the change house building to the concentrate unloading area will be elevated using asphalt to reduce the amount of dirt and contamination on the road surface.

The portion of the roadway behind the change house building will be sloped away from the building. If dusty conditions occur water will be applied to maintain a clean road surface. In addition, vehicles with obvious contamination will be pre-washed at the entrance to the elevated exit way.

Oversized vehicles, those vehicles that would not fit through the all-weather vehicle wash, i.e., cranes, large equipment, or trucks loaded with equipment, will be washed at the main entrance wash/pre-wash area, the south storage area / pre-wash area or the east storage area wash area.

Cleaned vehicles exiting the wash building will enter the flow of clean traffic in the green zone.

A gate will be installed across the Station Street portion of the facility near the intersection at Main Street. The gate will be closed and locked during non-business hours. Keys will be provided to the Herculaneum Sewer District and Fire Department.

Plans to design and construct the new roadway and gates have been approved by Doe Run management.

3.1.4.2 Potential Alternate Truck Route

The Doe Run Company has proposed alternative haul routes that would allow for plant traffic to travel to and from the smelter, while minimizing the exposure of Herculaneum residents. In addition to the cost of the alternate route itself, the feasibility of constructing an alternate route is also dependent upon the cost of implementing other measures under consideration by The Doe Run Company to address the offsite lead contamination issue. MDNR and the City of Herculaneum will make a decision to construct an alternate haul route after an evaluation of the measures implemented under the transportation plan and materials handling plan and the Voluntary Property Purchase Plan. There are four alternative routes under consideration and are shown on Figure 3. There is no commitment in this plan to construct a new bridge. Any haul route change will be subject to the consent agreement.

Old Joachim Railroad Bed Bypass

The City of Herculaneum has prepared an application and is actively pursuing funding for the construction of a new road and bridge across the Joachim on the south end of town. The traffic from the Herculaneum smelter would access the bridge via a road following a road Doe Run will construct along the old railroad bed, around the south side of town along the north side of the slag storage area and connect with the new road near what is currently Church Street. This would not only address the concentrate truck traffic, but would essentially remove all truck traffic out of the residential areas of Herculaneum and would significantly reduce the other related Doe Run traffic. The Doe Run Company continues to support the City in its quest for a new Herculaneum bridge, which would be above the flood plain, and has in a letter to the Mayor of Herculaneum, agreed to grant an easement across Doe Run property for both the new bridge and the access road and to provide assistance in moving slag for road base and provide some assistance in making necessary repairs to the existing bridge. This alternative route has several challenges primarily associated with crossing Joachim

Creek and the financial costs of constructing a bridge. This option is only to be implemented with outside funding for the bridge.

Station Street (Option I)

Route all traffic coming into town for business with the Doe Run Herculaneum Smelter onto Joachim Avenue at the southern Highway 61/67 entrance, across the Joachim Bridge to Brown Street, make a right turn onto Brown Street to Station Street, then turn left onto Station Street. Option I can be implemented immediately upon the City of Herculaneum erecting signs restricting heavy truck traffic on other roadways.

This will remove all truck traffic from other City streets and allow time for Doe Run to make offers to purchase properties necessary for Option II.

Dale & School Street (Option II)

Option II will follow the same streets from Highway 61/67 as above except it would follow Brown Street to Dale Street and would turn right onto to Dale Street to School Street, make a left onto School Street to Station Street.

This Option will require Doe Run to construct a small segment of School Street to connect Main Street with Station Street. Upon completion of this segment all Plant traffic, including employees could be routed through the south end of Herculaneum.

Dale & Wood Street (Option III)

Option III will follow the same route as outlined in Option II except that instead of using School Street, the traffic would follow to the end of Dale Street and then be connected with a new road to be constructed by Doe Run between the slag storage area and Wood Street, the road would then merge into Station Street south of the existing truck scales.

3.1.4.3 Main Entrance

The wash area at the main entrance will be used to pre-wash obvious contamination from vehicles prior to exiting to the all-weather vehicle wash station.

3.1.4.4 Concentrate Receiving

Doe run will construct a truck-to-rail transfer system, and lead concentrate will be transported by rail directly to the mixing bins. This system will allow the unloading of trucks directly into railcars, thus

significantly reducing the need to store lead concentrate on the ground and in turn reduce the potential for fugitive emissions.

Doe Run proposes to install a hopper/feeder in the existing truck unloading station. The lead-concentrate trucks will unload into the hopper/feeder which feeds concentrate at a steady rate directly onto a covered conveyor belt. The covered conveyor belt will extend east to the first set of plant interior rail tracks. The concentrate will then be moved by rail to the mixing bins. Refer to Figure 1A for the location of the truck-to-rail transfer system.

3.1.4.5 Transfer Stations, Dedicated Plant Trucks/Equipment

Loading docks, loading/unloading stations, or other types of transfer facilities will be considered/constructed where possible for unloading of material at the border of the red and green zones. The transfer stations will allow clean trucks to directly transfer materials from the green zone into the red zone. The materials would then be available for Doe Run personnel using in-plant dedicated trucks or equipment to deliver the materials as needed in the red zone.

3.1.5 Existing Best Management Practices

Best management practices may include training, general cleaning procedures, inspections, certifications, schedules, review meetings, preventive maintenance, and spill control contingency procedures as well as other nonstructural controls. This section provides a summary of the best management practices the facility has implemented to control materials transported to and from the facility. Appendix B contains the detailed best practice procedures, or detailed worker instructions. Appendix C contains examples of record documents such as checklists, certificates of inspection, and log sheets.

3.1.5.1 Training

Doe Run Company personnel responsible for cleaning vehicular traffic entering and exiting the plant will receive specific training. This training will include the importance of cleaning the vehicles, the procedures for cleaning, inspections, records, etc.

Doe Run personnel operating the wet street sweepers will receive training on: operation of the sweeper, importance of maintaining and following designated routes within the facility, following the designated schedule for cleaning specific areas or routes, and conditions when the wet sweepers may be used outside of the plant.

All Doe Run Company Herculaneum personnel receive training on the hazards associated with lead and how to minimize their exposure, as well as best management practices for handling lead and metal bearing materials, including utilization of appropriate personal protective equipment.

3.1.5.2 Control of Vehicles Entering the Plant

Vehicles that must enter the plant within the red zone are directed to stay within designated areas to prevent unnecessary contamination. Vehicles entering the plant are required to minimize their speed so as to minimize the amount of flinging and splashing of contaminants on the trucks' undercarriage. Drivers are notified of the plant traffic conditions, decontamination procedures, and safety requirements prior to entering the facility.

Where appropriate, delivery materials will be staged in green areas and transferred to dedicated internal plant trucks or equipment. For example we have moved the petroleum tanks near the fence which allows the distributor to fill the tanks without entering the plant and many of the warehouse deliveries take place at the main entrance without the truck having to enter the plant.

3.1.5.3 Vehicle Decontamination

The plan for decontamination of vehicles leaving the red zone within the plant is by utilization of portable pressure powerwash systems established at designated wash station locations. The designated locations are the only outbound or exit areas from the red zone and are located at the main entrance, south storage area entrance, and east storage area entrance, as shown on Figures 1 and 2.

The wash station is in operation at the main entrance and is described in Section 3.1.3.1, however a wash water collection line must be constructed prior to the utilization of the future wash station at the east storage area entrance shown on Figures 1 and 2. Until construction of the collection line is completed, a wash station has been set up on the edge of the Refinery Dock parking lot as shown on Figure 1 and as described in Section 3.1.3.3. A wastewater collection drain is provided at this location.

All trucks leaving the red zone via the south storage area entrance are cleaned at the portable pressure powerwash station near the south storage area entrance.

The portable pressure powerwash stations have similar equipment utilizing powered pressure washer units capable of generating a minimum of 1,500 psi water pressure and/or a fire hose. A sufficient length of water hose with a pressure spray nozzle is provided at each wash station to reach the vehicle to be cleaned. All areas of the vehicle to be cleaned will be washed with the pressure spray

nozzle. The areas to be cleaned on trucks leaving the red zone as applicable will include the bumpers, tailgate, wheels, tires, fenders, fender wells, mud flaps, accessible undercarriage of truck and cargo box or trailer, if necessary.

A portable power pressure wash station has also been implemented to clean trucks and trailers after unloading at the concentrate truck unloading station (Figures 1 and 2). The wash equipment at this station is similar to the equipment previously described. The areas to be cleaned are not as extensive as the areas for trucks leaving the red zone exit locations, since the rear of the trailer is the only area potentially contaminated. A description of the trailer unit areas to be cleaned and overall decontamination details are provided in 3.1.3.4.

3.1.5.4 Vehicle Decontamination in Freezing Conditions

Washing vehicles with water during potential freezing conditions creates an icing safety issue for traffic as well as employees required to wash the trucks. The misting of water can create ice at slightly above normal freezing temperatures. Therefore The Doe Run Company has constructed an all-weather vehicle wash for use during days when the temperature presents a potential freezing hazard.

3.1.5.5 Inspections and Certifications

Doe Run personnel inspect each vehicle after it has been decontaminated in accordance with 3.1.5.3. The inspection is focused on the undercarriage, wheels, tires, mud flaps, sides and tailgate areas. Detailed procedures are included in Appendix B. A certificate of inspection is given to the driver after the vehicle has passed the inspection. Examples of records including inspections and certificates are included in Appendix C.

3.1.5.6 Signs

Signs will be posted at the entrance/exits of the red zone to inform and remind drivers that they are entering or departing a potentially lead-contaminated zone and that their vehicle will require decontamination as they leave the red zone.

3.1.5.7 Cleaning of Internal Roads

The facility uses a wet sweeper and manual pressure washing or high volume hose to clean the internal red zone hard surface plant roads. The internal plant roads designated for wet sweeping and cleaning are shown on Figure 4. The plant's internal hard surfaced roads are scheduled for daily

cleaning. The wet sweeper is required to cover all designated areas at least once daily, barring unplanned interruptions such as equipment malfunctions or inclement weather.

In addition to wet sweeping of the plant's internal roads, heavy use areas or areas that may have a high potential for lead contamination receive additional steps to minimize potential fugitive emissions and/or receive a thorough cleaning. Some of the additional steps are continual sprinkling of an area or hosing down specific areas.

The movement of slag handling equipment, such as front-end loader, water truck, etc., to be used at the slag storage area crosses the green zone road at the railroad crossing at the south end of the plant. The Doe Run Company employees immediately clean the area of the road where the equipment crosses.

3.1.5.8 Road Maintenance

Within the facility, the area managers are responsible for ensuring that the designated traffic roadways are maintained so that they can be adequately cleaned by the wet street sweeper. Lead-bearing material will be kept out of the traffic area to the extent possible. The structural condition of the roads will be inspected once a calendar quarter. Repairs will be made as needed.

3.1.5.9 Spill Detection and Cleanup (Internal Plant Roadways)

The area managers, or their designee, will inspect the designated routes within the facility used by offsite trucks that enter the red zone. If spills or significant tracking of lead-bearing materials from internal plant traffic is observed, the area will be cleaned as soon as possible. Inspections of the preferred routes are performed daily.

3.1.5.10 Sampling and Verification

A verification sampling program has been developed to establish and confirm that the green zone has minimal potential for lead contamination and that the public roadways designated as haul routes are not being impacted by tracking of lead contaminants from the plant. The verification sampling program was implemented by June 1, 2002.

Interim sampling and verification points as shown on Figure 1 have been established on Station Street west of the intersection of Station Street and Main Street and on Main Street near the intersection of Curved Street to verify that designated green zones are adequately clean.

The designated sampling and verification points are subject to change if the designated haul routes change. Currently the lead-concentrate trucks follow one of the designated haul routes as shown on Figure 3 when exiting the plant. Generally the trucks are directed to use the route utilizing Station Street, however on occasion trucks are directed to stay on Main Street to Joachim Avenue rather than taking Station Street. Sampling will only be conducted at one location that is representative of the concentrate trucks haul route exit lane during the sampling period. In the event both designated haul routes were utilized by exiting concentrate trucks during the sampling period, samples will be collected at both locations from the exit lane. Sampling will be conducted and analyzed by Doe Run staff in accordance with the sampling protocol contained in Appendix E.

Sampling and analysis will be conducted on a weekly basis for the first two months. If after two months the analysis data does not exceed the interim reference standard of 2.0 mg Pb/ft^2 of road surface, the sampling frequency will be extended to bi-weekly. If after four months of additional sampling and analysis the interim reference standard is not exceeded, the sampling frequency will be extended to monthly.

If the analysis indicates that the total lead dust exceeds the interim reference standard of 2.0 mg Pb/ft^2 of road surface, the following contingency measures will be implemented:

<u>Contingency #1</u> – Doe Run will validate sweeper performance of the EV1 dry vacuum sweeper.

<u>Contingency #2</u> – Doe Run will immediately require all product trucks be washed as they exit the plant.

All vehicles will be washed at the south storage area entrance as they exit the plant using the same procedures described in Section 3.1.5.3. The vehicle washing will continue until sampling and analysis demonstrates that the verification sampling points do not exceed 2.0 mg Pb/ft^2 of road surface. In addition to the vehicle washing, additional street sweeping of the green zone adjacent to the plant will be conducted.

3.1.5.11 Management Review

Plant management will review the Transportation and Materials Handling Plan annually to determine its effectiveness. The review will include structural controls, best management practices, and work instructions. Structural controls and best management practices not meeting expectation or not providing adequate control will be updated. Where appropriate, designated alternative or new structural controls and best management practices will be implemented. The Doe Run Company will

notify the EPA and DNR if at any time significant changes are made to this plan. Changes to the plan will be submitted as amendments.

3.1.6 Proposed Best Management Practices

3.1.6.1 Single Exit from Red Zone

All lead-concentrate trucks and vehicles entering the red zone will be routed through a single point of exit located at the all-weather vehicle wash facility (see Figure 1a). Oversized vehicles, i.e., cranes, loaders, trucks, etc. that exit the red zone and cannot fit through the all-weather vehicle wash will be washed at a portable high pressure wash station before entering the green zone.

Product trucks will not be washed unless lead loading (mg/ft^2), sampled by EPA, on the East Road midway between the loading dock and the rail road tracks on the exit lane is higher than the lead loading found on non-truck route road(s) in Herculaneum. (Non-haul route road lead loading and concentration will be determined by EPA.) If the East Road lead-loading sample is greater than the lead-loading sample of the non-truck route road(s), then Doe Run will wash all trucks, including product trucks, until EPA samples determine that the East Road has been cleaned to lead level equal or less than the non-haul truck road. If cleaning problems affect operations, or product truckers refuse to agree to be washed in business impacting numbers, Doe Run will suspend washing on product trucks and notify EPA and submit a modification for EPA approval within two weeks.

The new road for lead-concentrate trucks and routing of lead-concentrate trucks to the vehicle wash station will be complete by October 1, 2003.

3.1.6.2 Pre-Wash Stations

Vehicles with obvious contamination will be pre-washed with a portable high-pressure washer before traveling to the all-weather vehicle wash facility (see Figure 1a).

3.1.6.3 Access Control

The gate to be installed at the Station Street portion of the facility will be closed during non-business hours. Keys will be provided to the Herculaneum Sewer District and Fire Department.

3.2 Mines – Outbound Lead Concentrate

There are four Doe Run mills that produce the lead concentrate that is shipped to the Herculaneum smelter. The mills are the Brushy Creek, Fletcher, Buick, and Sweetwater mine/mill facilities. A

transportation plan addressing loading of the concentrate into the trucks at the mills for shipment to the Herculaneum smelter has been developed and submitted to Missouri Department of Natural Resources (MDNR) under separate cover. A revised plan will be submitted within 2 weeks after approval of this plan.

3.3 In Route – Lead Concentrate

3.3.1 Structural Controls

3.3.1.1 Bulk Trailers for Lead-Bearing Materials

Tarped trailers used to haul Department of Transportation (DOT) Hazard Class 9 materials in bulk meet DOT packaging requirements. These trailers are equipped with heavy-duty tight sealing tarps. The trailers are constructed to prevent sifting of concentrate material. The tailgates are fitted with a seal and a locking closure to ensure a snug fit at the interface between the trailer bed and tailgate and to prevent the tailgate from opening during transport.

We will evaluate, with the carrier, a soft rubber seal. If this or other seals and/or sealants are found effective, Doe Run will ask EPA for approval.

In the past 24 months Doe Run and the carrier have made significant changes in the fleet and modifications to the trailers in an effort to eliminate leakage of lead concentrate during transit.

3.3.1.2 Spill Equipment

The transport contractor is responsible for responding to any spills during transit and maintains the necessary equipment for adequate response.

Although the contractor has the responsibility to respond to spills, Doe Run stocks spill response equipment and supplies that can be quickly loaded onto a small truck in the event there is a spill during transit and additional equipment may be needed. The spill equipment includes shovels, bags, drums, personal protective equipment, two-way radios, and traffic barriers.

3.3.2 Existing Best Management Practices

3.3.2.1 Dry Street Sweeping

All of the designated green zone and the full length of the designated routes from Hwy 61/67 to the plant through Herculaneum are, and will continue to be, mechanically swept no less than once per

day, barring unplanned interruptions such as equipment malfunctions or wet road surface. The designated roads include Main Street, Joachim Road, Brown Street, and Station Street as depicted in Figure 3. Streets east of Highway 61/67 that are not part of the designated truck routes are swept as deemed necessary but not on a set schedule. Currently the dry sweeper used is a dry vacuum street sweeper with an approximate vacuum pull of 15,000 cfm. Materials picked up from the road drop out into an internal hopper, and the air is discharged through 2.5 micron dry polyester cartridges. The sweeper will be operated at least six hours per day Monday through Friday and four hours on Saturday and Sunday.

A second dry sweeper has been purchased. This will allow for additional sweeping capabilities and minimize interruption from required maintenance, malfunction and breakdown. This will also make a second sweeper available for contingency sweeping in the event of a spill of lead bearing material.

Doe Run will begin immediately to use our Ultra Vac or similar technology on the sides of the haul routes from the product dock, along the East Road to the Station Street portion of the facility, along Station Street to the corner of Station Street and Brown Street going west and from the corner of Station Street and Main Street to the corner of Main Street and Curved Street going north. This will be done at least once every 6 months, beginning in May 2003.

3.3.2.2 Training

The Doe Run Company requires that all drivers transporting lead concentrate remain current on all required DOT hazardous materials training. In addition, general lead awareness training is provided to all Doe Run employees.

3.3.2.3 Road Inspection

The Doe Run Company crews inspect the designated haul roads up to Highway 61/67 on a daily basis. Spills are cleaned in accordance with the appropriate spill response procedures provided in Appendix B.

3.3.2.4 Spill Response

The appropriate spill response action for spillage of lead-contaminated material on the public roadways varies dependent upon the amount of material spilled. The regularly scheduled daily dry sweeping of an area may be adequate to clean up a very small quantity of lead-contaminated material, or Doe Run may schedule a special sweeping of an area, if deemed necessary to clean up some small quantity spills. In some cases, a Doe Run crew may use hand tools to clean up a small

quantity spill in lieu of, or in combination with, mechanical sweeping or vacuuming of an area. In the event of a large spill, the carrier is responsible for providing cleanup response. An example of a large spill would be an overturned truck spilling the cargo contents. Such a scenario would require the response of the carrier's cleanup crew utilizing hand tools in combination with large equipment such as a front loader and additional trucks. In the case of a large spill, Doe Run provides oversight and assistance, if needed, to the carrier's cleanup crew to ensure the area is properly and adequately cleaned. Any spills should be reported immediately to 636-933-3091 or 636-479-5311.

3.3.3 Proposed Best Management Practices

3.3.3.1 Dry Street Sweeping

As previously described, Doe Run is planning for construction of a new lead-concentrate unloading facility as a new structural control. The hard surface roads constructed or designated to serve the new concentrate unloading facility will be mechanically swept with the previously described dry sweeper no less than once per day. The mechanical dry sweeping will commence upon the start-up of the concentrate unloading facility.

3.4 Implementation and Construction Schedule

Project	Schedule
Station Street Gate Installation	90 days after Doe Run takes possession of the street from the City of Herculaneum
New Concentrate Truck Road	
Design	July 31, 2003
Construction	July 15, 2003 through September 30, 2003
Completion	October 1, 2003
Vehicle Wash Spray	
Installation	October 1, 2003
Automation	March 31, 2004
New Lead Concentrate Hopper/Feeder and Covered Conveyor System	
Engineering	Complete by December 29, 2003
Contractor bids, materials, and construction	Complete by June 27, 2004

Railcar Unloader Doors Installation	
Start	1st Quarter 2004
Complete	April 30, 2004
Begin Ultra-Vac Utilization	May 2003
Begin Sealing of Stock Piles	June 2002
Lead-Concentrate Truck Tailgate Seals	
Evaluation and Implementation	
Spray Foam	August 31, 2003
Soft Rubber Seal	August 31, 2003

4.0 Railroad Transportation Plan

4.1 Rail Inbound

4.1.1 Lead Concentrate

In December 2001, Doe Run obtained a contract with a railroad with agreed rates to haul lead concentrate to its Herculaneum smelter. The railroad cancelled the contract on December 27, 2001. Despite extensive negotiations, Doe Run has yet to obtain a new agreement with the railroad. Although Doe Run will continue to seek to use rail to haul concentrates to its Herculaneum smelter, such haulage is not likely in the near future.

4.1.2 Coke

Coke will be received by commercial rail on an intermittent basis and spotted on the Doe Run switchyard at the Herculaneum facility. The cars will be spotted in place by the Doe Run engine at the south end of the plant and unloaded to the stockpile. The coke will then be reloaded to bottom dump cars and transferred to the No. 1 Trestle coke bins where the bottom dump cars will be unloaded and the coke fed to the process.

4.2 Rail Outbound

4.2.1 Refined Lead and Lead Alloys

Refined lead and lead alloys are the finished products manufactured by the facility. These products are shipped out of the facility in the form of lead ingots and bars in a variety of weights and sizes, and large sheets of lead for the battery industry. The ingots and bars are shipped from the refinery dock or from the lead strip mill building. Due to the form and physical nature of these products, their potential impact to human health and the environment is easily managed, and the products have negligible potential for contributing to fugitive emissions from the facility.

4.3 Existing Structural Controls

4.3.1 Sift-Proof Railcars

Arrangements have been made for sift-proof railcars designed to transport Class 9 hazardous materials, including lead concentrate. These cars will be employed to transport concentrate from the

Glover transload station to the Herculaneum plant. These cars will have a completely sealed car body and a sealing fiberglass plastic composite top.

4.3.2 Railcar Unloader

The Herculaneum plant has a railcar unloader that transfers the ore concentrate directly into the feed hopper of the smelter. Railcars are pushed up the trestle to the unloader station. Once in position, the unloader transfers the concentrate into the feed hopper by rotating the railcar approximately 160° from vertical.

4.4 Proposed Structural Controls

4.4.1 Transloading Station – Glover

A transloading station will be constructed at the Glover Smelter to transfer lead concentrate from local mine trucks to railcars and then to be delivered to Herculaneum, after the procurement of contracts, in an effort to reduce the truck traffic hauling concentrate to the Herculaneum facility.

4.5 Best Management Practices

4.5.1 Railcar Unloader

Railcars loaded with lead concentrate will be delivered to Doe Run rail by commercial rail service, and Doe Run personnel will inspect the cars upon arrival. Doe Run personnel will fill out a form (to be developed for Appendix C) detailing the following information: time, date, person gathering information, car numbers, cover in place, visible damage to cover, visible damage to car, any sign of spillage, and any other pertinent information. All signs of damage or spillage will be immediately reported to their supervisor.

Loaded railcars will be stored covered in the rail yards or the thaw house until the concentrate is removed.

Cars with concentrate that is needed immediately will be unloaded and taken from the rail yard or thaw house and spotted south of the railcar unloader. The cover will be removed and the car moved into the unloader mechanism. The car will be tipped and the concentrate will be unloaded into the hopper. The car will be righted, checked for and cleaned of any spillage on the outside of car and then moved back from the unloader to replace the cover on the car. The car will be inspected and an unloader form (to be developed for Appendix C) detailing time, date, operator, cover placement, car

condition and any other pertinent information will be completed. Cars will only be unloaded at the unloader between 6:00 a.m. and 6:00 p.m. Empty covered cars will be spotted in the Doe Run rail yard for pick up by the commercial rail service.

4.5.2 Railcars to Stockpile Area

Efforts will be made to unload all incoming railcars at the unloader. However, in situations that prevent utilization of the unloader such as when the smelter is not operating, the unloader is not operational, more concentrate is received than can be processed upon receipt, or other instances, concentrate will be unloaded in the south stockpile area using an excavator fitted with a clamshell bucket. Railcars that must be unloaded to the stockpile will be taken from the Doe Run rail yard or thaw house and spotted south of the railcar unloader to have covers removed. The cars will then be moved to the stockpile at the south end of the plant and unloaded with an excavator. After obtaining a bucket full of material from the railcar, the operator will lower the bucket close to the pile before opening the bucket to minimize the potential for fugitive lead-bearing materials emissions. After the car has been emptied, it will be checked for concentrate material on the outside of the box. If concentrate is observed on the railcar, it will be washed or brushed clean. Once inspected and determined clean, the car will be moved back to the area south of the unloader and the cover will be replaced and secured. The car will be inspected and all pertinent information documented. An unloader form (to be developed for Appendix C) detailing time, date, operator, cover placement, car condition and other pertinent information will be completed. The empty covered cars will then be spotted in the Doe Run rail yard for pick up by the commercial rail service.

4.5.3 Transload Station - Glover

The railcars will be inspected for damage prior to loading. If damage is observed or suspected, the railcar will be taken out of service for further evaluation and/or maintenance. Once a railcar is loaded and the cover placed on the car, it will be inspected to ensure that the outside of the car is free of lead concentrate. If concentrate is observed on the railcar, it will be washed. During freezing temperatures, the railcar will be cleaned using alternative methods. Once inspected and determined clean, the loaded, covered cars will then be spotted in the Doe Run rail yard for pick up by the commercial rail service.

4.5.4 Product Dock

Refined lead products at the refinery and strip mill building loading docks are stored under roof. Railcars to be loaded are spotted next to the loading docks minimizing the exposure of the products during loading operations.

Refinery dock and strip mill personnel will inspect the Doe Run railcar siding area each shipping day for lead-bearing materials that may have been spilled. If any lead-bearing material is discovered, the spilled material will be removed and the specific area will be cleaned as appropriate. The date and the person performing the inspection and cleanup will be recorded in the refinery dock and strip mill logbooks.

5.0 Barge Transportation Plan

Barge transportation of lead concentrate or other lead-bearing materials is not currently used at the Herculaneum smelter facility, nor are there plans to begin barge hauling of lead concentrate in the immediate future. In the event The Doe Run Company should decide to resume barge transportation of concentrate or other materials at the Herculaneum facility, the barge transportation plan will be evaluated and updated. The updated plan will be incorporated in this overall plan prior to the use of the barge unloading facility to transfer lead concentrate or lead-bearing materials.

6.0 Materials Handling Plan

This section is intended to address handling of in-plant materials that have the potential to generate fugitive dust emissions and the potential to cause tracking of lead-bearing materials within the plant and outside of the plant. The various storage locations of the in-plant materials described in this section are shown on Figure 5. Portions of the lead-bearing materials described in this section have the potential to be shipped offsite to other facilities in lieu of use at the Herculaneum Smelter. All best management practices for the material moved will be applicable. Trucks entering the red zone will exit at the all-weather vehicle wash facility where they will be washed. If necessary, these trucks will be pre-washed before traveling to the all-weather wash facility.

Process Overview

Lead concentrate (lead sulfide), slag, flux, and other lead-bearing materials are roasted in the sintering plant to produce lead oxide sinter. The sinter is then charged into the blast furnace with coke and additional flux. Molten lead and slag are tapped from the bottom of the furnace. The molten lead is transferred to the dross plant and allowed to cool to remove copper and other impurities. These impurities are skimmed off of the top of the molten lead. The molten lead is then transferred to the refinery kettles where silver and zinc are removed. The lead is further refined to remove any final impurities and then cast into lead and lead alloy products. A series of lead-bearing material flow diagrams is included in Appendix D to illustrate the movement of materials within the plant during this process.

6.1 Lead Concentrate

Lead concentrate delivered to the facility by rail is unloaded at the railcar unloader and transferred to the sinter plant mix-room bins by conveyor. Doe Run plans to optimize utilization of the concentrate in the smelter upon receipt at the plant (railcar just-in-time usage). However, if there is not sufficient storage capacity at the mix-room storage bins, concentrate is stored in the railcars or unloaded in the south storage area. A concentrate flow diagram for the Herculaneum facility is included as D-1 in Appendix D.

Concentrate delivered by truck at the concentrate truck unloading station is unloaded into the temporary storage bin. Concentrate will be moved from the temporary storage bin by front-end loader or conveyer system. Concentrate will either be loaded into gondola railcars for immediate use or moved to the south storage area. Doe Run has acquired additional gondola cars to be used for storage of lead concentrate to minimize the amount of concentrate stored on the south storage area.

When needed, the concentrate at the south end storage area will be loaded into gondola railcars by front-end loader and moved to the car unloader by Doe Run's yard engine. A concentrate flow diagram for the Herculaneum facility is included as D-1 in Appendix D.

6.1.1 Existing Structural Controls

Particulate from the sinter plant and storage bin area is collected and filtered in Baghouse 3 and the south end baghouses. Dust and other particulate from the baghouses are recycled back into the sinter plant material. Significant changes have been made in the procedures for handling baghouse dust to prevent fugitive emissions (see Section 6.3.).

Sulfur dioxide gas is released by the oxidation of lead sulfide in the sintering process and is captured by the acid plant where industrial grade sulfuric acid (93.5 percent concentration) is produced. This acid is carefully stored in tanks at the facility, following all appropriate guidelines or procedures, and later sold and shipped as a by-product.

Sinter plant bins, conveyors, and feed systems are located inside the sinter plant building. The conveyor from the sinter plant to the blast furnace is enclosed.

The railcar unloader is inside a covered building and the conveyor from the railcar unloader to the sinter plant mix-room storage bins is enclosed to reduce the potential to create airborne dust.

Stormwater and surface water runoff from the south storage area, concentrate handling areas, and the railcar unloader is collected and treated in the facility wastewater treatment plant.

6.1.2 Proposed Structural Controls

The Doe Run Company is planning to install doors on the railcar unloader structure in accordance with the schedule established as part of the SIP requirements under the authority of the Missouri Department of Natural Resources, Air Pollution Control Program. (Start by 1st quarter of 2004 and complete by April 30, 2004.)

As previously stated in 3.1.4.4, Doe Run will construct a new lead-concentrate truck-to-rail transfer system that will allow the lead-concentrate trucks to unload and transfer concentrate directly into railcars. Doe Run will add sufficient railcars to accommodate the new truck-to-rail transfer system.

Construction of the transfer system is scheduled for completion by June 27, 2004.

6.1.3 Best Management Practices

The concentrate, if it has dried in storage and has the potential to create dust, will be moistened prior to handling. A portable water spray fogging system may be used in addition to or in lieu of the fixed water spray system. Railcars will be unloaded in the storage area with an excavator fitted with a clamshell bucket. After obtaining a bucket full of material from the railcar, the operator will lower the bucket close to the pile before opening the bucket, thereby minimizing the potential for fugitive airborne lead-bearing materials.

Upon completion of unloading, the concentrate stockpile will be sealed by spraying a hydrated lime and water solution (milk of lime), or other suitable solution, on the surface of the stockpile. The lime and water solution then dries and forms a coating, or crust, over the surface of the stockpile reducing the potential for fugitive air emissions. The stockpile will be inspected at least weekly and resealed if it is disturbed or shows signs of dusting.

Plant personnel responsible for handling concentrate will receive training on best management practices for handling lead-bearing materials as well as the importance of reducing fugitive emissions.

6.2 Sinter

Sinter is transferred directly to the blast furnace by conveyor. The sinter plant is taken off-line on an average of twice a week for maintenance. The blast furnace operates nonstop. As a result, sinter plant production must exceed the blast furnace consumption in order to have enough sinter to feed the blast furnace while the sinter plant is off-line. When the sinter plant out-produces the blast furnace and exceeds sinter plant storage bin capacity, sinter is loaded into railcars or transferred to the south storage area via Doe Run dump trucks. Refer to D-2 in Appendix D.

When the sinter plant is off-line, the sinter handling process is reversed. Sinter stocked in the south storage area is loaded into bottom dump railcars. Bottom dump railcars are emptied on Trestle Number One where the sinter is directly transferred to the blast furnace feed bins.

6.2.1 Existing Structural Controls

Particulate from the sinter plant and storage bin area is collected and filtered in Baghouse 3 and the south end baghouse. Dust and other particulate from the baghouses are recycled back into the sinter plant material. Significant changes have been made in the procedures for handling baghouse dust to prevent fugitive emissions (see Section 6.3). Sulfur dioxide gas is released by the oxidation of lead sulfide in the sintering process and is captured by the acid plant where an industrial grade sulfuric acid (93.5 percent concentration) is produced. This acid is carefully stored in tanks at the facility following all appropriate guidelines or procedures, and sold and shipped as a by-product.

Stormwater and surface water runoff from the south storage area, the sinter plant area, and railcar unloader is collected and treated in the facility wastewater treatment plant.

6.2.2 Proposed Structural Controls

Doors will be unconditionally installed on the railcar unloader as previously specified in 6.1.2.

6.2.3 Best Management Practices

When the sinter plant is brought back online, sinter will first be taken from the storage bins, followed by sinter stored in railcars, and then from the south storage area. This order of utilizing the available sinter reduces the amount of material handling and thus reduces the potential for fugitive emissions.

The sinter will be moistened before it is unloaded from the yard trucks, pushed into piles by the front-end loader, or loaded into railcars. If the sinter shows signs of dusting while being handled, it will be moistened as necessary. Using milk of lime on sinter is not practicable. Sinter is stored and then used in a matter of a few days. Because of the size of sinter (normally several inches in diameter) it is not susceptible to wind erosion. As stated above, if dust is a problem during loading and hauling the sinter will be wetted first.

Equipment operators and plant personnel responsible for handling sinter will receive training regarding best management practices and the importance of reducing fugitive dust as a result of handling sinter. Ultimately, the facility plans to store all stocked sinter in railcars, eliminating the need for loading and unloading sinter in the south storage area.

6.3 Fume

The blast furnace is the primary source of fume generated at the facility. Fume generated from the operation of the blast furnaces is captured at No. 5 process baghouse. This process has been modified to reduce handling and potential for fugitive emissions. With the modifications the fume is now recycled directly to the mixing room of the sinter plant via a newly installed covered conveyor system when the sinter plant is in operation.

Also an additional storage bin has been put into service in the mixing room of the sinter plant for temporary storage of fume generated by the blast furnace. This bin has the capacity to handle all fume generated during routine shut down of the sinter plant. This extra capacity means railcars will no longer be needed to store fume except on an emergency basis.

The railcars will only be used as emergency storage for fume, and all best practices to manage any fugitive dust will be followed if railcars are used, Doe Run is using tarp covers for loaded fume railcars.

6.3.1 Existing Structural Controls

Modifications now allow fume to be transferred directly to the sinter plant from the baghouse via the new covered Redler conveyor while the sinter plant is operating. The new conveyor significantly reduces the potential for fugitive emissions as a result of transferring fume.

The railcar unloader is inside a covered building and the conveyor from the railcar unloader to the sinter plant storage bins is enclosed to reduce the potential to create airborne dust.

Stormwater and cleanup water runoff from the fume handling area is collected and treated in the facility wastewater treatment plant.

6.3.2 Proposed Structural Controls

As previously discussed, Doe Run plans to install doors on the unloader enclosure in accordance with the SIP requirements.

6.3.3 Best Management Practices

Fume is transferred via the new Redler conveyor directly to the sinter plant. If the sinter plant bin storage capacity is full, fume is moistened before it is loaded and stored in covered railcars. The storage of fume in covered railcars significantly reduces the potential for fugitive emissions

associated with the handling of the fume as compared to stockpiling the fume and the additional loading and unloading associated with stockpiling. When the sinter plant is back online, fume stored in railcars will be unloaded as soon as practical.

In the event of a prolonged interruption in operation of the sinter plant, and as a last resort, fume may be stockpiled in the south storage area. The unloading procedures utilizing an excavator equipped with a clamshell bucket will be followed as previously described. The moistening procedures as previously described for loading, unloading or movement of the stockpile for lead concentrate and sinter at the south storage area will also be followed. The stockpile of fume will be sealed by spraying a hydrated lime and inspected and resealed if it is disturbed or shows signs of dusting. Stockpiled fume will be routinely used when the sinter plant is back online, fume will first be taken from the railcars, followed by fume from the sealed storage piles. This order of utilizing available fume minimizes the amount of fume handling, thereby reducing the potential for fugitive dust of lead-contaminated material.

Equipment operators and plant personnel responsible for handling fume will receive training regarding best management practices and the importance of minimizing the potential for fugitive dust associated with handling fume.

6.4 Dross

Kettle dross is generated as a by-product of the smelting process. Reference D-4 of Appendix D for a dross material flow diagram. Kettle dross is a granular lead and copper-bearing product. Dross is produced in the dross plant by slowly cooling the kettles of lead and allowing the copper to move from the liquid phase to solid phase. As the lead cools, the solid copper phase will float to the top of the kettle and be skimmed off and moistened. A wetting screw has been added to the drossing procedures. Dross that is skimmed off the kettle is put into a bin constructed with a screw conveyor filled with water. At the end of the wetting screw, the material feeds to the dross floor, is picked up by a skid steer loader, and placed on a day storage pad in the dross plant to await assay results for metal content. The dross is now wet and has very low potential for fugitive emissions.

Dross that is low in copper content will be loaded on a conveyor belt and recycled in the blast furnace. Dross that is high enough in copper content will be moved to the dross storage building. The high copper content dross is sold as a raw feed material for copper smelting. On a periodic basis, the dross is moved from the dross storage building and then loaded from the east side of the building by front loader into covered commercial end-dump tractor-trailer units for transport offsite.

6.4.1 Existing Structural Controls

With the exception of loading delivery trucks, dross is handled within the dross plant and blast furnace buildings where the air is filtered through a baghouse. The dust and fume from the baghouse is recycled back into the sinter plant feed. A dross wetting screw is used to wet the dross prior to being transferred to the dross storage building under normal operating conditions. Stormwater and cleanup water runoff from the dross plant and storage building area is collected and treated in the facility wastewater treatment plant.

Complete building enclosure of the dross plant and blast furnace buildings along with increased air filtering capacity was completed July 31, 2002, thus eliminating dross handling emissions from this operation. Dross staged for shipment in the dross storage building will be moistened prior to loading into covered commercial trucks. When loaded, the truck proceeds to the red zone exit where the truck is washed in accordance with 3.1.5 before the truck proceeds to the scale house for weighing.

6.4.2 Proposed Structural Controls

Work will be done to store all dross inside a building to further reduce the potential for emissions from the storage of dross and lead-bearing materials.

6.4.3 Best Management Practices

Dross will be moistened during the truck loading operations to minimize the potential for fugitive dust. The truck route for the commercial trucks is within the daily wet sweeping area and the trucks are washed upon leaving the plant.

Equipment operators and plant personnel responsible for handling dross will receive training regarding best management practices and the importance of reducing fugitive dust emissions as a result of handling dross.

6.5 Flux

Doe Run utilizes both lead-bearing and nonlead-bearing flux materials. Both forms of flux may be shipped to the facility in sift-proof cubic yard boxes, super sacks, 55-gallon drums, bulk end-dump trucks, or railcar. Examples of lead-bearing flux materials include leaded cathode ray tubes, flux glass, sand blast material, cleanup soil/silica, and electrical components.. Nonlead-bearing flux may include sulfur, coke breeze, coke, copper, zinc, glass, sand/silica, iron pyrite, mill scale, limestone, lime, and clay.

Refer to D-5 of Appendix D for a material flow diagram of lead-bearing flux material. Lead-bearing flux materials shipped by truck in cubic yard boxes, super sacks, 55-gallon drums, or other pallet-sized containers are unloaded at the strip mill dock area. The materials are then loaded in a boxcar on the east side of the strip mill building. The yard engine then moves the boxcar to the south storage area where the material is unloaded and stored until used in the smelting process.

Bulk lead-bearing flux materials are unloaded directly in the south storage area. Bulk nonlead-bearing fluxes will be delivered to and unloaded at the south storage area.

As flux is needed, it is loaded onto railcars from storage and delivered to the blast furnace feed bins at Trestle Number One or sinter plant bins via the railcar dump. Flux may also be transferred directly to the blast furnace charge or sinter plant charge using railcars, yard dump trucks, or front-end loaders.

6.5.1 Existing Structural Controls

Fine lead bearing flux stored in the south storage area will be moistened while handling and sealed with lime slurry during storage to reduce the potential for fugitive dust associated with handling lead-bearing fluxes that may create dust.

Stormwater and surface water runoff from the lead-bearing flux storage areas is collected and treated in the facility wastewater treatment plant.

Non lead-bearing flux will be stored at the south storage area. Bulk delivery trucks will unload directly onto the pad at the south end. Trucks are washed at the south storage pad / concentrate unloading area, prior to entering the green zone.

6.5.2 Best Management Practices

Any containerized lead-bearing material with the potential for fugitive emissions if the container integrity is compromised will be taken directly to the smelter for processing. The strip mill truck and rail dock area will be inspected and cleaned as necessary after each shipment of lead-bearing fluxes.

Bulk lead-bearing fluxes with the potential for creating airborne lead-bearing materials will be wetted prior to loading and unloading. A hydrated lime and water solution will be applied to stockpiled lead-bearing fluxes with the potential for fugitive airborne lead-bearing materials. The stockpile will be routinely inspected and resealed if it is disturbed or shows signs of dusting.

Plant personnel responsible for handling flux receive training on best management practices for handling lead-bearing material.

6.6 Slag

Slag is a glassy, sand-like material that contains less than two percent lead. Because the lead contained in slag is encapsulated, it is not easily absorbed by the body. The two types of slag produced at the blast furnace are granulated and shell slag. Reference D-6 of Appendix D for the plant's slag material flow diagram. Granulated slag is produced by spraying molten slag with water as it runs out of the slag launderer. This slag is slurried to the slag dewatering bins where excess water is removed. Most granulated slag is recycled to the sinter plant. The recycled slag is routinely moved directly from the dewatering bin via conveyor belt to the sinter plant mixing bins.

Excess slag that is not needed by the sinter plant is moved to the slag storage area in dedicated gondola railcars. These dedicated gondola railcars are used exclusively for moving slag. They have been inspected to ensure that there are no holes that would allow leakage of slag during transport to the slag storage area. The slag is loaded to the railcars and taken to the slag storage area south of the plant. Past practice involved removing the slag from the dewatering bins in a dump truck and storing in on the ground and then loading the slag into the rail cars with a front-end loader. Doe Run has now installed a conveyor from the dewatering bins to the rail line and is loading slag directly into rail cars. This reduces the handling and the potential for fugitive emissions from the slag. The slag from the dewatering bins is in a very damp condition which prevents any dusting. The slag is removed from the railcars by excavator and placed on the slag pile. When the railcar has been emptied, the excavator operator will inspect the car and brush any loose slag from the top sill, hand brake area, steps, grab irons, etc. The excavator operator will then inform the engine operator when the railcar is available to move back to the plant.

At times, the slag must be reconfigured to allow continual use of rail. During those times, a wheeled loader or other equipment will be taken to the slag area and used to move the slag. If dusting occurs, the slag will be moistened prior to movement. All equipment will be cleaned before it crosses the south road, and if necessary, the south road will be cleaned as specified in 3.1.5.7 when equipment is moved across it.

During rare occasions, slag may need to be "changed out" for metallurgical balances. This means that slag at the slag storage area will be loaded into empty railcars and returned for recycle through

the plant. If dusting occurs, the slag will be moistened prior to loading. If equipment is moved across the south road, the road will be cleaned as previously specified.

On occasion, slag may be stored in the plant in railcars. When the sinter plant requires slag and none is available from the dewatering bins, the railcars will be moved to the unloader and emptied to fill the sinter plant mixing bins.

When the furnace granulation system cannot be used, shell slag may be produced when slag is removed from the front of the furnace and cast into slag pots. These pots are then moved from the furnace crane to the north end of the crane bay where the slag is allowed to solidify. Originally, upon solidification, the slag pots were turned over and the slag is allowed to further cool at the shell slag area east of the water treatment plant as shown on Figure 5. By July 31, 2002, new procedures and equipment were in place to allow the slag pots to be turned over within the crane bay for further cooling after solidification, and the outside shell slag cooling area was eliminated further reducing fugitive emissions from the plant. When cool, the shell slag is loaded onto a railcar and hauled to the slag storage area. An excavator will be used at the slag storage area to unload the slag from the railcar. After unloading, an inspection will be made of the outside of the railcar, and any visible slag will be removed prior to moving the car. If movement of the excavator across the south road is required, the road will be cleaned as previously specified.

Approximately 100 tons per week of granulated blast furnace slag is used as flux material at the Doe Run Buick Resource Recycling Division. Slag transported from the Herculaneum facility to the Buick facility will be shipped by tarped truck. After crossing the scale, the trucks enter the front gate and proceed north to the thaw house area shown on Figure 5. A front-end loader then brings damp slag from the dewatering bins and loads the truck. When loaded, the truck proceeds to the red zone exit where the truck is washed in accordance with 3.1.5 before the truck proceeds to the scale house for weighing. This offsite materials handling step is not shown on the slag materials handling flow chart (D-6).

6.6.1 Existing Structural Controls

The slurry handling system reduces the potential for fugitive emissions from handling granular slag. The slag removed from the slag dewatering bins still contains enough moisture to keep the slag damp as it is transferred to the sinter mix-room bins by covered conveyor. Slag transferred to the slag storage area by railcar contains enough moisture to minimize the potential for fugitive dust.

6.6.2 Proposed Structural Controls

Doe Run is evaluating various structural controls for the slag storage area in accordance with the requirements specified under the Administrative Order on Consent (Docket No. CERCLA-7-2000-0029/RCRA-7-2000-0018).

6.6.3 Best Management Practices

Doe Run personnel will ensure that slag-handling activities do not create a dusty condition or have a potential for fugitive dust. Granular slag will be moistened prior to handling. Loading or regrading activities at the slag storage will utilize wetting procedures prior to handling slag when necessary to control fugitive emissions. Plant personnel responsible for handling slag will receive training on best management practices for handling slag.

6.7 Coke

Coke is a nonlead-bearing carbon by-product of the refining industry. It can contain fines that have the potential to create fugitive dust. Coke is used as both a flux and a source of fuel for the smelting process. Coke is delivered preferentially by rail and to a lesser extent by truck. Doe Run has requested from its coke suppliers that deliveries be made on rail if possible. This helps to reduce the number of trucks traveling in Herculaneum streets. Loaded railcars are stored in the rail yards or the thaw house until the coke is to be removed. Coke cars will normally be emptied directly to the #1 Trestle as a furnace feed. Railcars containing coke may also be unloaded and then reloaded by excavator at the south end storage area.

If coke is received by truck it will be unloaded on the south end. When unloaded, the truck proceeds to the red zone exit where the truck is washed in accordance with 3.1.5 before the truck proceeds to the scale house for weighing.

6.7.1 Best Management Practices

The potential for lead emissions from coke is determined by any in-plant, lead-bearing dust that may be present. Best management practices implemented for lead-bearing material will minimize the potential for airborne lead from coke handling activities.

6.8 Plant Cleanup and Maintenance

This section addresses non-process activities and associated materials that have a potential to generate fugitive dust or a potential to track lead-bearing materials. Reference Material Flow Diagrams D-7.1, D-7.2 and D-7.3 for a description of materials movement for this section.

Doe Run will, when appropriate, recycle cleanup materials back into the process within the department in which the material was generated. Cleanup material that cannot be recycled within the department will be processed and recycled back into other feed stock materials. The feedstock where cleanup materials are recycled is dependent on the size of the cleanup material. Cleanup materials will be sized by a power screen or by hand. Material less than one inch in size is recycled into the sinter plant feed. Material between one and four inches is recycled into the blast furnace feed at Trestle No. 1. Materials greater than four inches are introduced into the top of the blast furnace.

6.8.1 Road Dust Control

Internal plant roadways may accumulate dust and other lead-bearing materials. In an effort to control potential tracking of lead-bearing material within and outside of the facility, Doe Run has implemented a road cleaning program. This program consists of best management practices including rapid spill cleanup response, daily wet mechanical sweeping, occasional wetting of designated areas by water sprinklers, and manual hose down and cleaning of specific areas. Designated internal roadways are paved and physically maintained to facilitate cleaning. Figure 4 shows the internal area cleaned by mechanical wet sweepers or by water hosing.

6.8.2 In-Plant Demolition Materials

Material generated during construction projects, demolition, etc. will be evaluated for reuse or disposal. Material to be disposed of usually falls into three different categories.

Metal

Metal that can be cleaned will be separated so that it can be sold to an appropriate scrap dealer. This metal scrap will be cleaned at the north end of the furnace crane bay where it will be cut and sized to fit in a trailer. Scrap metal trucks will be loaded at the north end of the furnace crane bay and washed at the front gate wash station upon exiting. Metal that cannot be satisfactorily cleaned will be cut and sized at the north end of the furnace crane bay. The scrap metal will be sized to fit in a bobcat bucket and will be recycled into the top of the blast furnace.

Concrete

Minus four-inch material will be recycled into the smelter feed materials. Four-inch plus material will be cleaned and placed in a demolition debris dumpster staged in the south storage area. The concrete will be disposed of in accordance with applicable regulatory requirements.

Demolition Excavation Material

Potential lead-contaminated demolition excavation materials and associated soils will be sized and recycled into the appropriate feed stock material as applicable. Material that cannot be recycled will be disposed of in accordance with applicable regulatory requirements.

6.8.3 Plant Sumps and Wastewater Treatment Sludge

Clean out material from drain sumps located within the plant are stored in the wet sump shed located in the south storage area. The material is recycled as part of the sinter feed. If the sump material is dry when it is removed from the wet storage shed, a water fogging system will be used to prevent fugitive dust.

All plant process, washdown, and drainage water is treated at the wastewater treatment plant and discharged according to the facility's National Pollutant Discharge Elimination System (NPDES) discharge permit. Filter press cake generated by the wastewater treatment plant is gravity loaded into a Doe Run railcar at the wastewater treatment plant. The filter cake material is then unloaded at the south storage area. When the material is sufficiently dry, it is loaded back onto a railcar, unloaded at the railcar unloader, and recycled with the sinter plant feed. Dried or partially dried sump cleanup will be sprayed or misted with water during loading or handling. The piles will be sealed using a lime slurry. They will be resealed if they are disturbed or show signs of dusting.

6.8.4 Barrings

Blast furnaces are periodically taken off-line for maintenance. When the maintenance includes digging out and removing the molten and semi-molten charge materials, referred to as barrings, they are routinely stored indoors in the blast furnace department until they can be recycled back into the furnace. If a full dig out of the furnace is necessary, barrings will be screened before recycling back into the furnace. These barrings will be moved outside to the screen area by front-end loader. A water spray system will be used during the screening to minimize the potential for fugitive dust. Barrings less than one inch in size will be recycled back to the sinter plant. Barrings between one and four inches in size will be stored on the pad by the screen until they can be loaded into a bottom

dump railcar. Upon loading, using the water spray fogging system as necessary, the railcar is moved onto the No. 1 Trestle and off loaded into the blast furnace feed storage bins. Chunk barrings greater than four inches in size will be recycled back into the furnace.

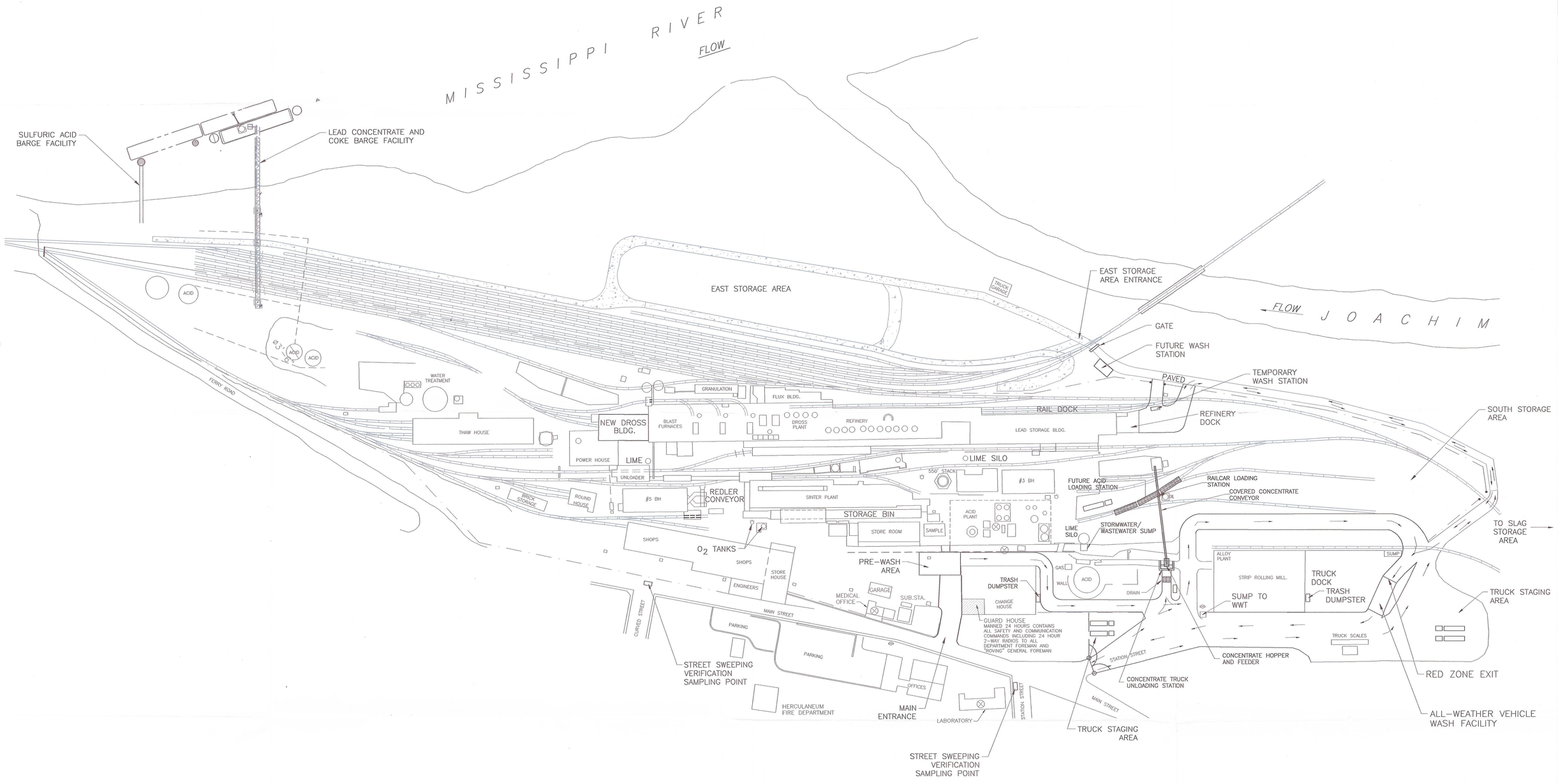
6.8.5 Refractory Material

Used refractory material is classified as a hazardous waste. When refractory is removed from service, it is stored in a hazardous material bin located east of the thawhouse building. The bin is placarded on four sides and covered so that water cannot enter the bin and material cannot escape the bin. The bin is securely re-covered after material is added. The amount of material placed in the bin is recorded in a logbook located in the services office. Waste refractory material is shipped offsite prior to the 90-day hazardous waste generator storage limit. A licensed hazardous waste transporter hauls the waste refractory to a permitted hazardous waste disposal facility where the refractory is stabilized and landfilled in a Subtitle C landfill. Doe Run personnel will inspect the truck to make sure the container is covered and that the manifest has been completed and appropriate placards are in place. When loaded, the truck proceeds to the red zone exit where the truck is washed in accordance with 3.1.5 before the truck proceeds to the scale house for weighing.

6.9 Sulfuric Acid

The Doe Run Company follows detailed operational procedures for handling sulfuric acid at the Herculaneum Smelter. The "Operational Procedures for Sulfuric Acid" manual is kept on file at the Herculaneum facility and is incorporated by reference as part of the Materials Handling Plan.

Figures



1 — PLAN: PLANT LAYOUT MAP
N.T.S.

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	SDL	JYD	JYD	06/23/03	ADDED TRUCK TO RAIL TRANSFER SYSTEM AND CHANGED LOCATION OF INTERNAL HAUL ROADS
2	TLM	TLM	JYD	04/15/04	MODIFIED/RELOCATED TRUCK TO RAIL TRANSFER SYSTEM AND CHANGED LOCATION OF INTERNAL HAUL ROADS

RELEASED TO/FOR: CLIENT, BID, CONSTRUCTION

DATE RELEASED: A B C 0 1 2 3

BARR
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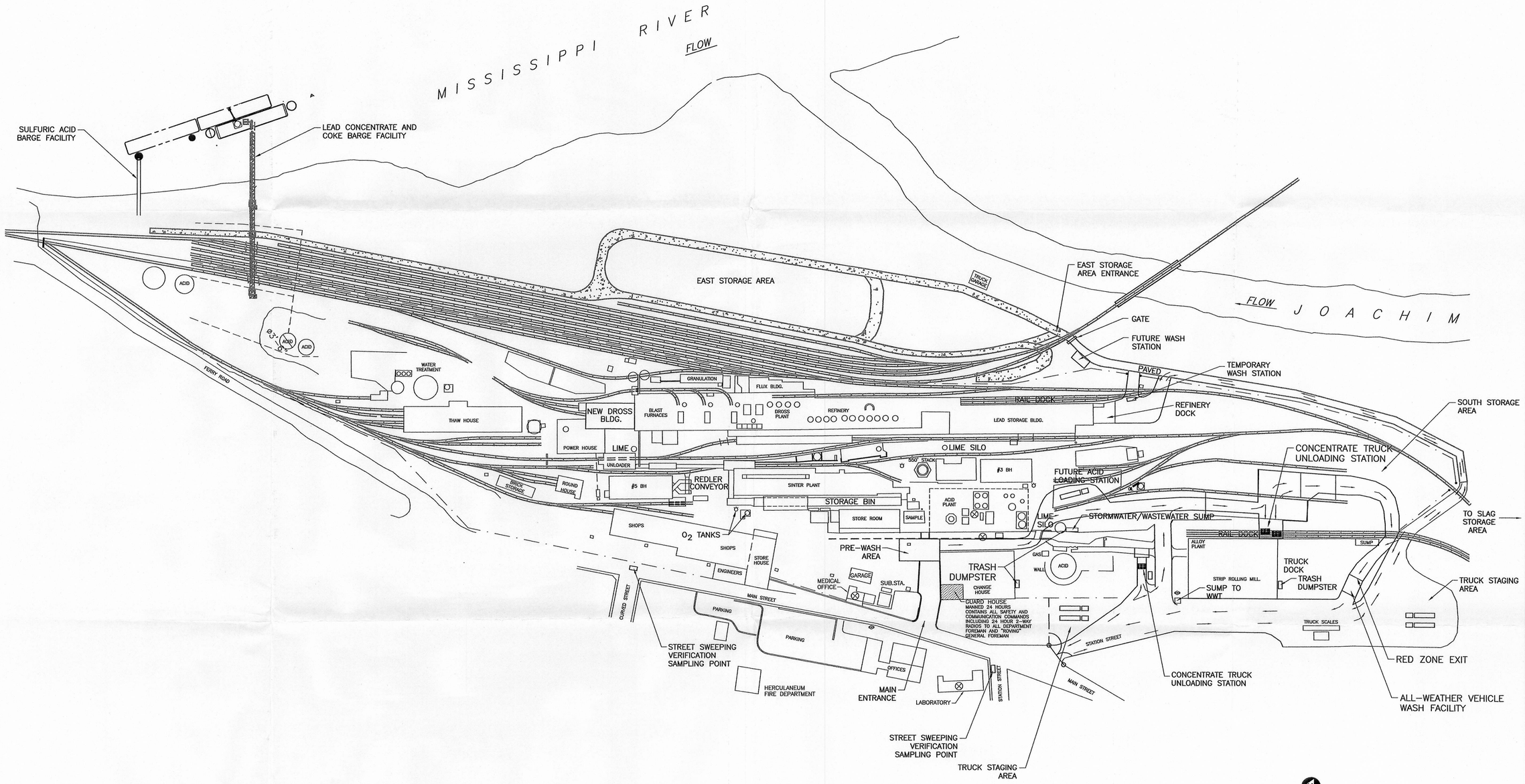
Scale	NTS
Date	03/31/03
Drawn	SDL
Checked	JYD
Designed	
Approved	

THE DOE RUN COMPANY
HERCULANEUM, MO

PLANT LAYOUT MAP
PROPOSED STRUCTURAL CONTROLS
FIGURE 1A

BARR PROJECT No. 25/51-018
CLIENT PROJECT No.
DWG. No.
REV. No. —

TLM M:\cad\2551018\REVISED 6-20-03\FIGURE_1A_REVISED_REV 2.dwg Plot at 1600 03/25/2004 17:02:37



1 — PLAN: PLANT LAYOUT MAP
N.T.S.

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

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Scale	NTS
Date	6/23/03
Drawn	SDL
Checked	JYD
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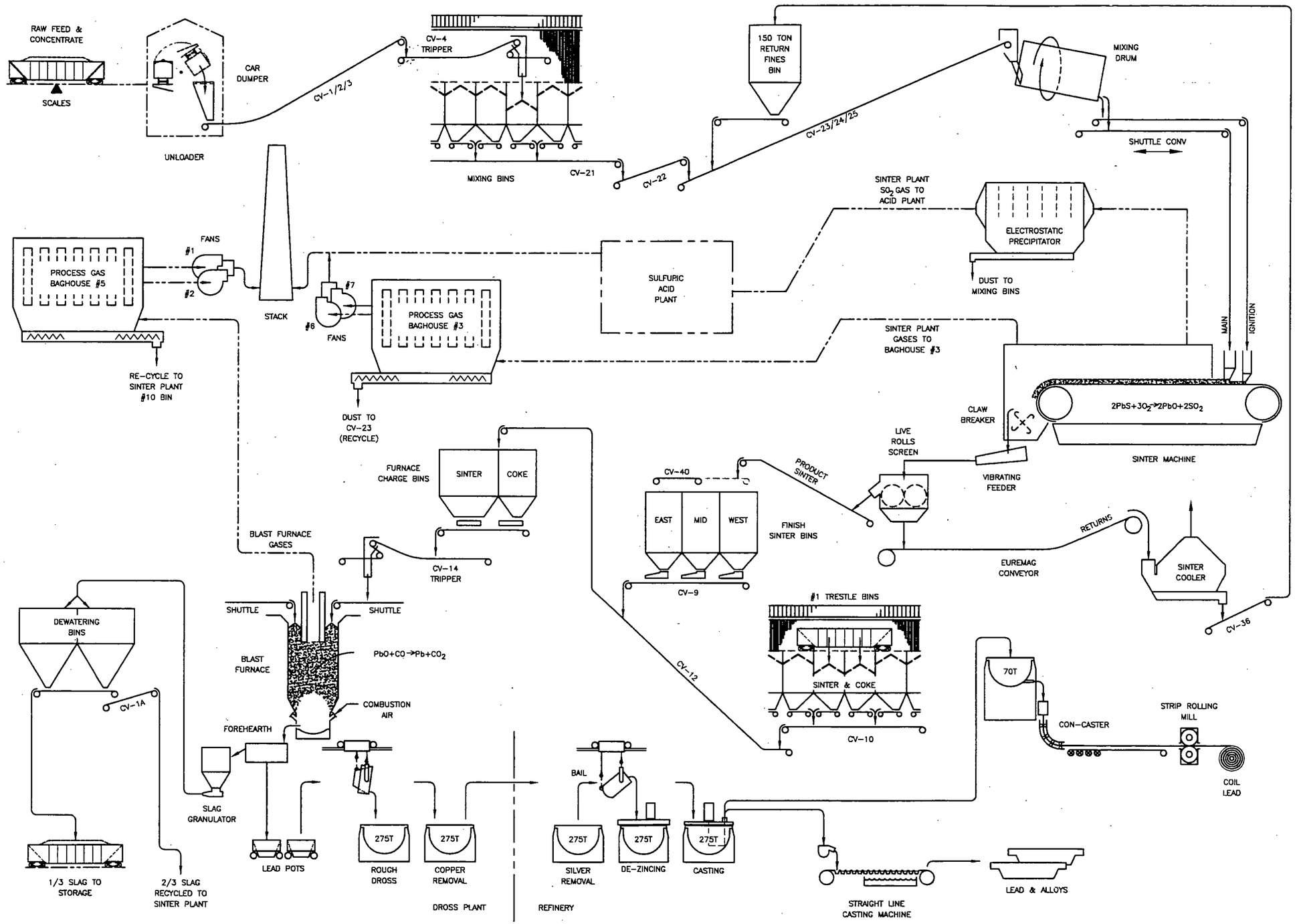
THE DOE RUN COMPANY
HERCULANEUM, MO

PLANT LAYOUT MAP
PROPOSED STRUCTURAL CONTROLS
FIGURE 1A

BARR PROJECT No. 25/51-018
CLIENT PROJECT No.
DWG. No.
REV. No. –

o:\jf M:\cad\25510181\REVISED 6-20-03\FIGURE_1A_REVISED.dwg Plot at 1600 06/23/2003 16:50:11



NO.	BY	CHK	APP.	DATE	REVISION DESCRIPTION

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Scale	NTS
Date	5/15/02
Drawn	SDL
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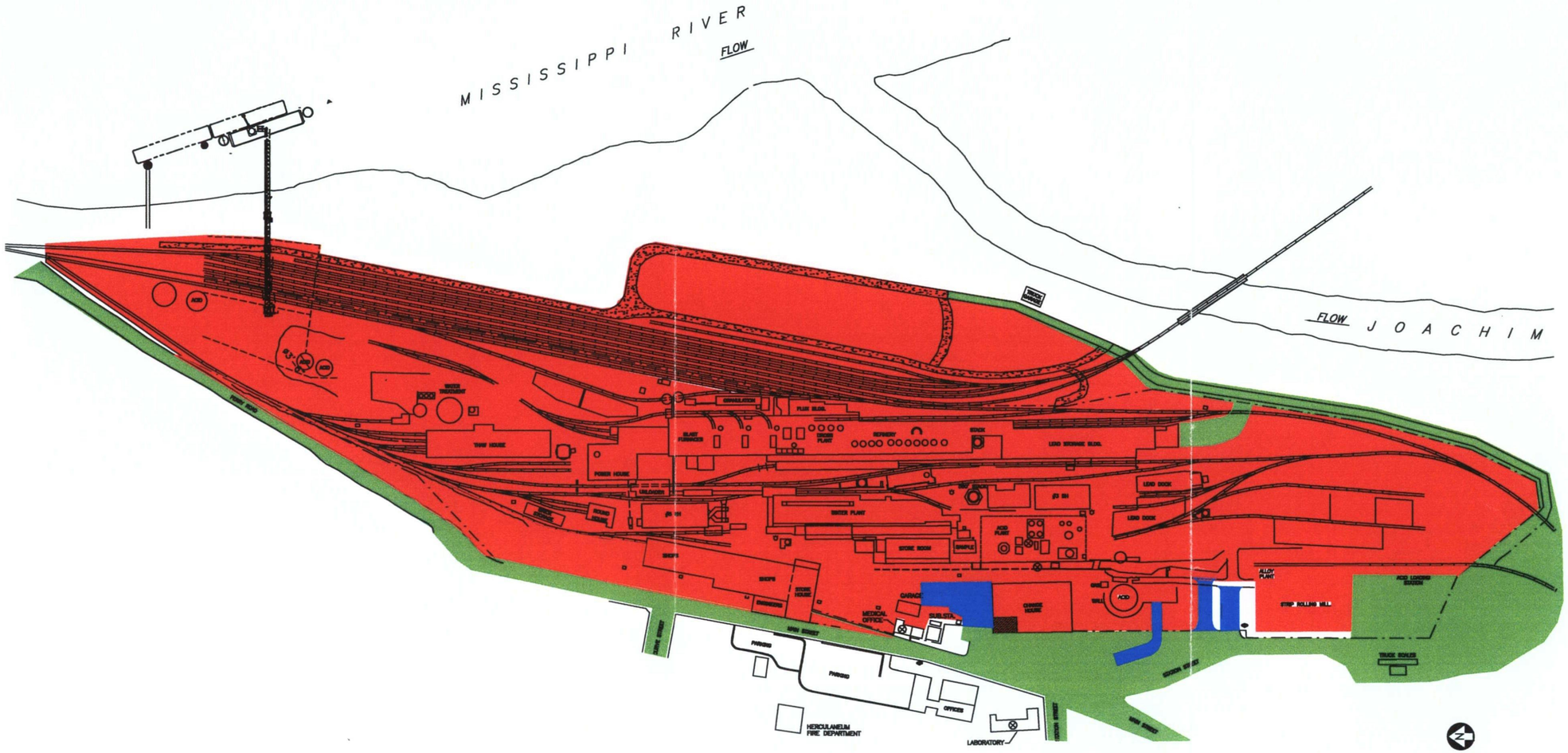
Designed	
Approved	

THE DOE RUN COMPANY
HERCULANEUM, MO

FIGURE 1B

SMELTER FLOW SHEET (WITH PROCESS BAG HOUSES)

BARR PROJECT No. 25/51-018
CLIENT PROJECT No.
DWG. No.
REV. No. –



NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

CLIENT
BID
CONSTRUCTION

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Date	3/22/02
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Approved	

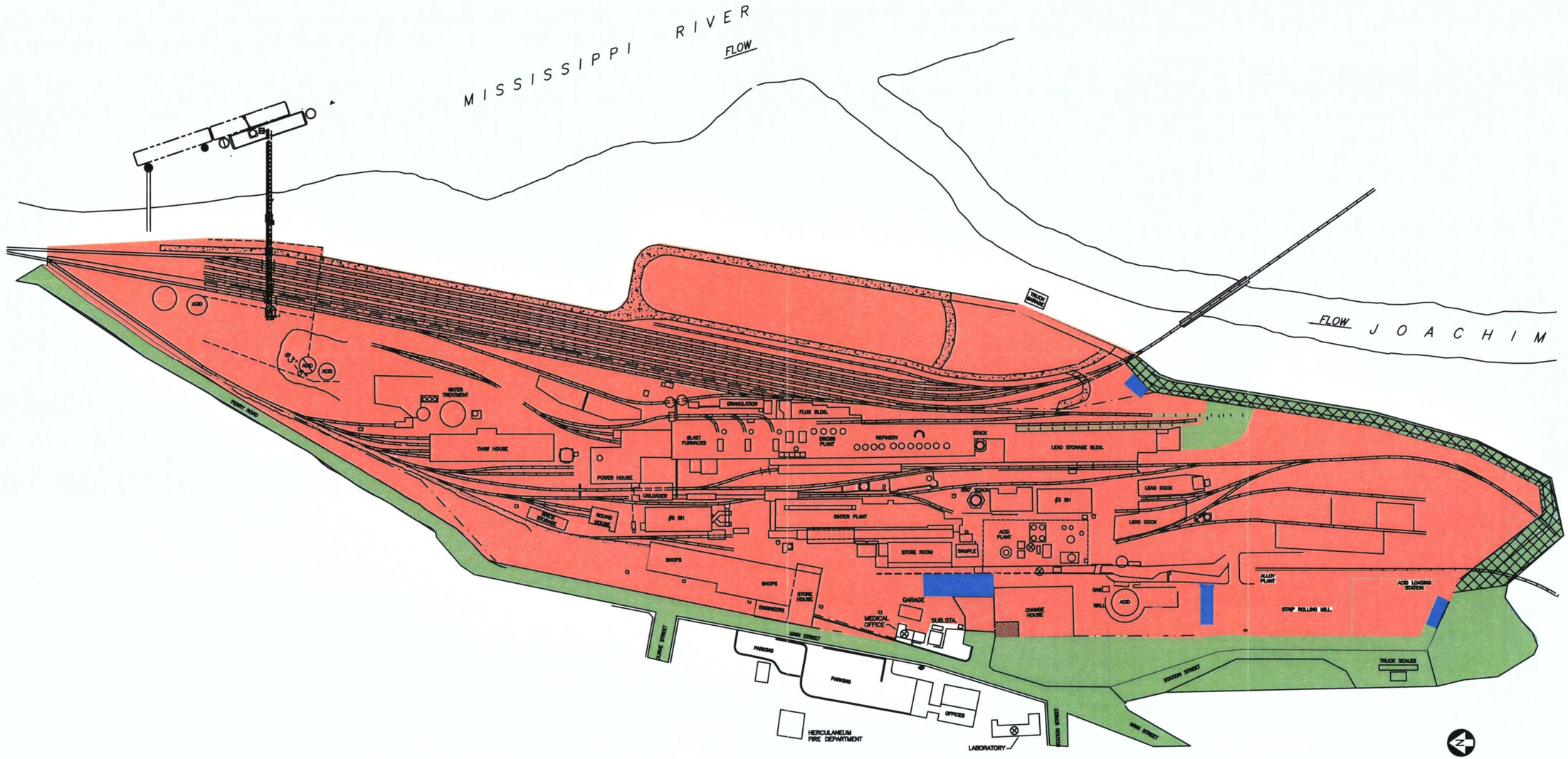
THE DOE RUN COMPANY
HERCULANEUM, MO

RED & GREEN ZONE MAP

FIGURE 2

BARR PROJECT No. 25/51-018
CLIENT PROJECT No.
DWG. No.
REV. No.

I:\81 M:\cad\25510101\REVISED 6-20-03\FIGURE_2_REVISED.dwg Plot at 1600 04/23/2003 11:57:40



NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	TLM	TLM	JYD	04/15/04	REVISED RED/GREEN DEPENDENT ZONE ON ROAD NEAR ENTRY OF VEHICLE WASH STATION

RELEASED TO/FOR: CLIENT, BID, CONSTRUCTION

DATE RELEASED: A B C 0 1 2 3

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Scale	AS SHOWN
Date	3/22/02
Drawn	SDL
Checked	
Designed	
Approved	

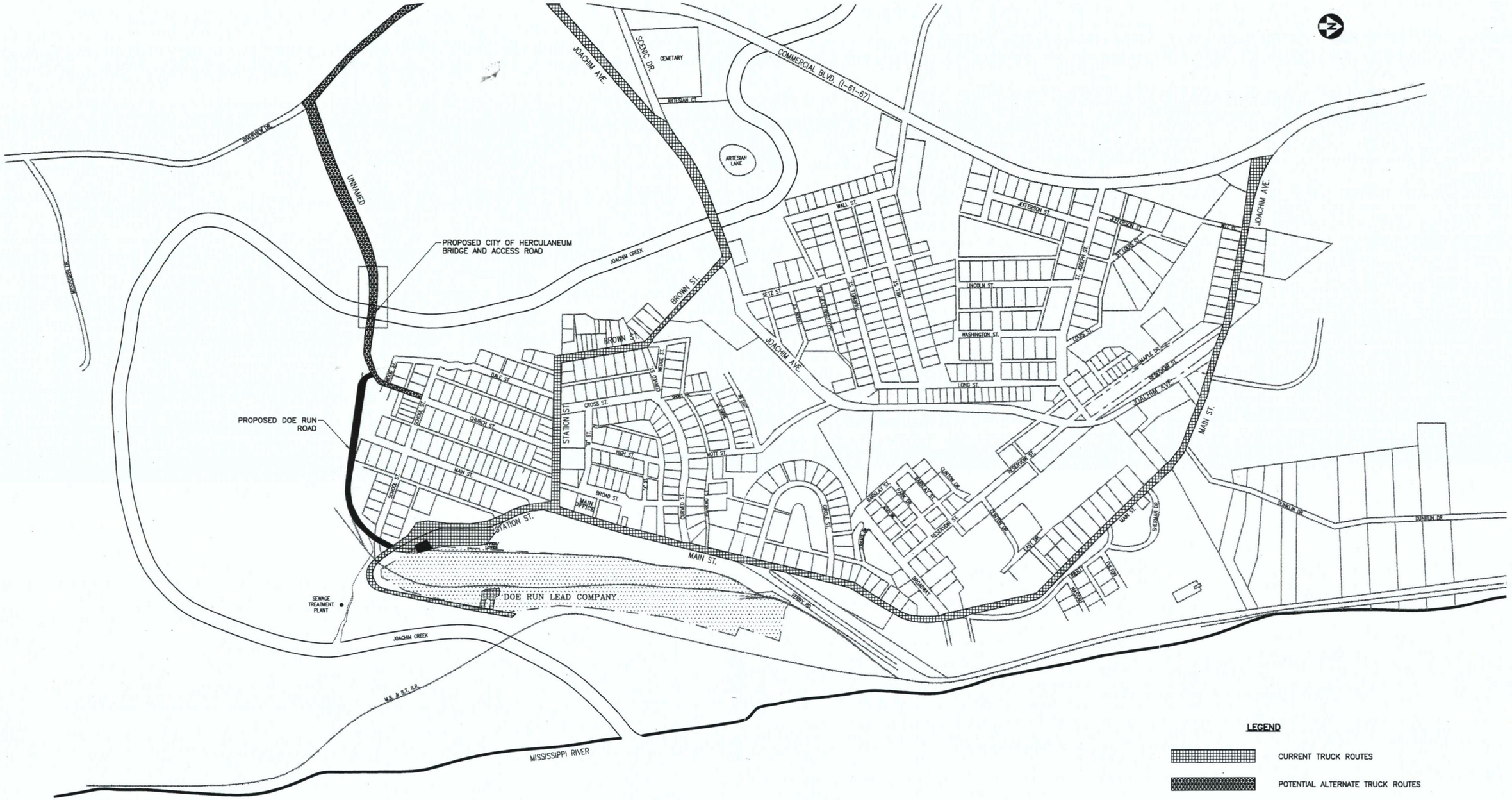
THE DOE RUN COMPANY
HERCULANEUM, MO

RED & GREEN ZONE MAP
PROPOSED

FIGURE 2A

BARR PROJECT No. 25/51-018
CLIENT PROJECT No.
DWG. No.
REV. No.

TLM M:\cad\25510161\REVISED 6-20-03\March 2004 Revisions\FIGURE_2A_REVISED_REV2.dwg Plot at 1600 03/29/2004 11:46:53



NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

CLIENT
BID
CONSTRUCTION

RELEASED TO/FOR

A	B	C	0	1	2	3
DATE RELEASED						

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Scale	NTS
Date	3/22/02
Drawn	SDL
Checked	
Designed	
Approved	

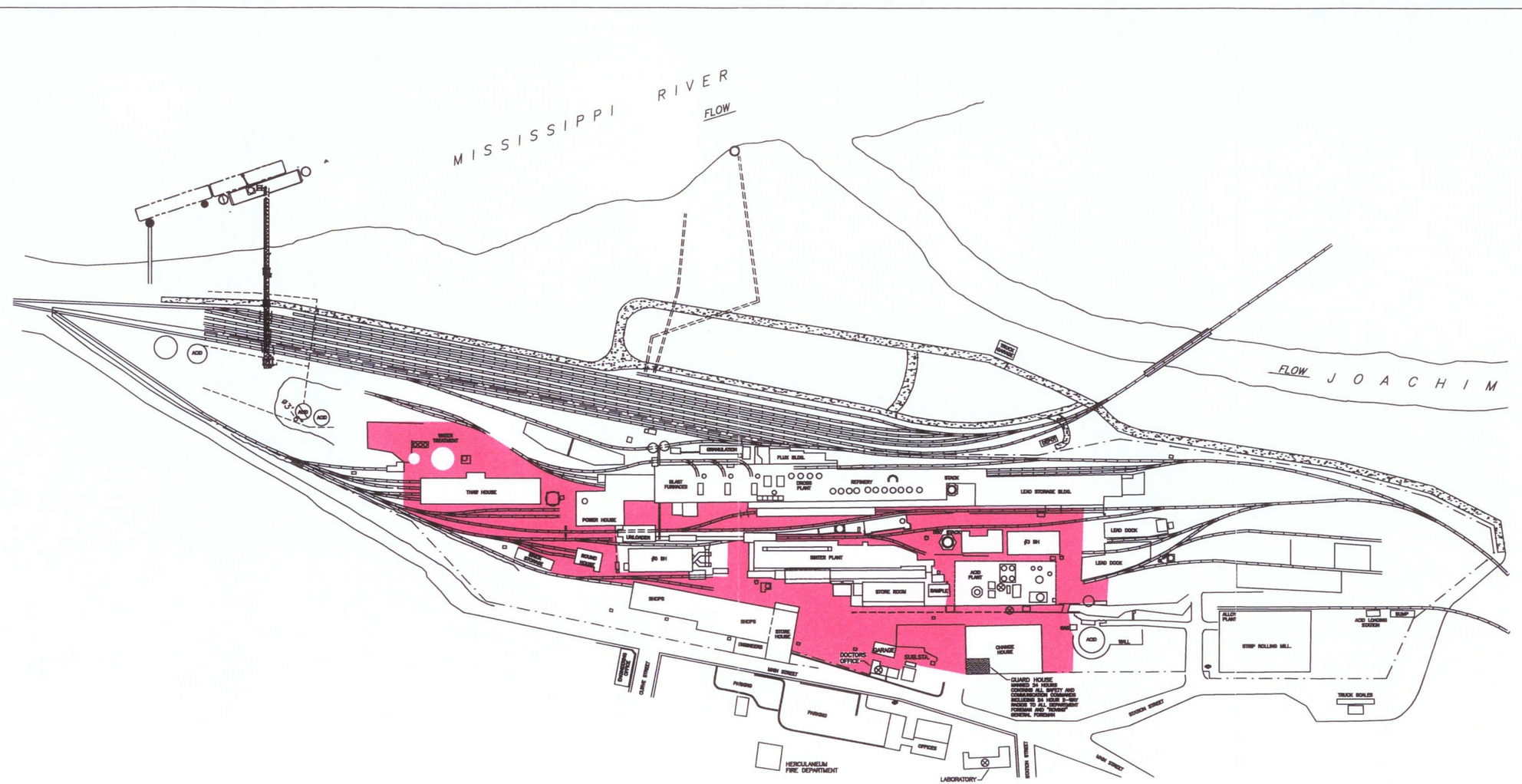
THE DOE RUN COMPANY
HERCULANEUM, MO

DESIGNATED TRUCK TRAFFIC ROUTES

FIGURE 3

BARR PROJECT No. 25/51-018
CLIENT PROJECT No.
DWG. No.
REV. No. –

sdl M:\cad\25\51018\FIGURE_3A.dwg Plot at 1 03/26/2003 14:54:35



NOT TO SCALE

AREA CLEANED BY MECHANICAL WET SWEEPER AND PRESSURE/HIGH VOLUME WASH

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

RELEASED TO/FOR: CLIENT / BID / CONSTRUCTION

DATE RELEASED: A | B | C | 0 | 1 | 2 | 3

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Date	6/23/03
Drawn	SDL
Checked	JYD
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Approved	

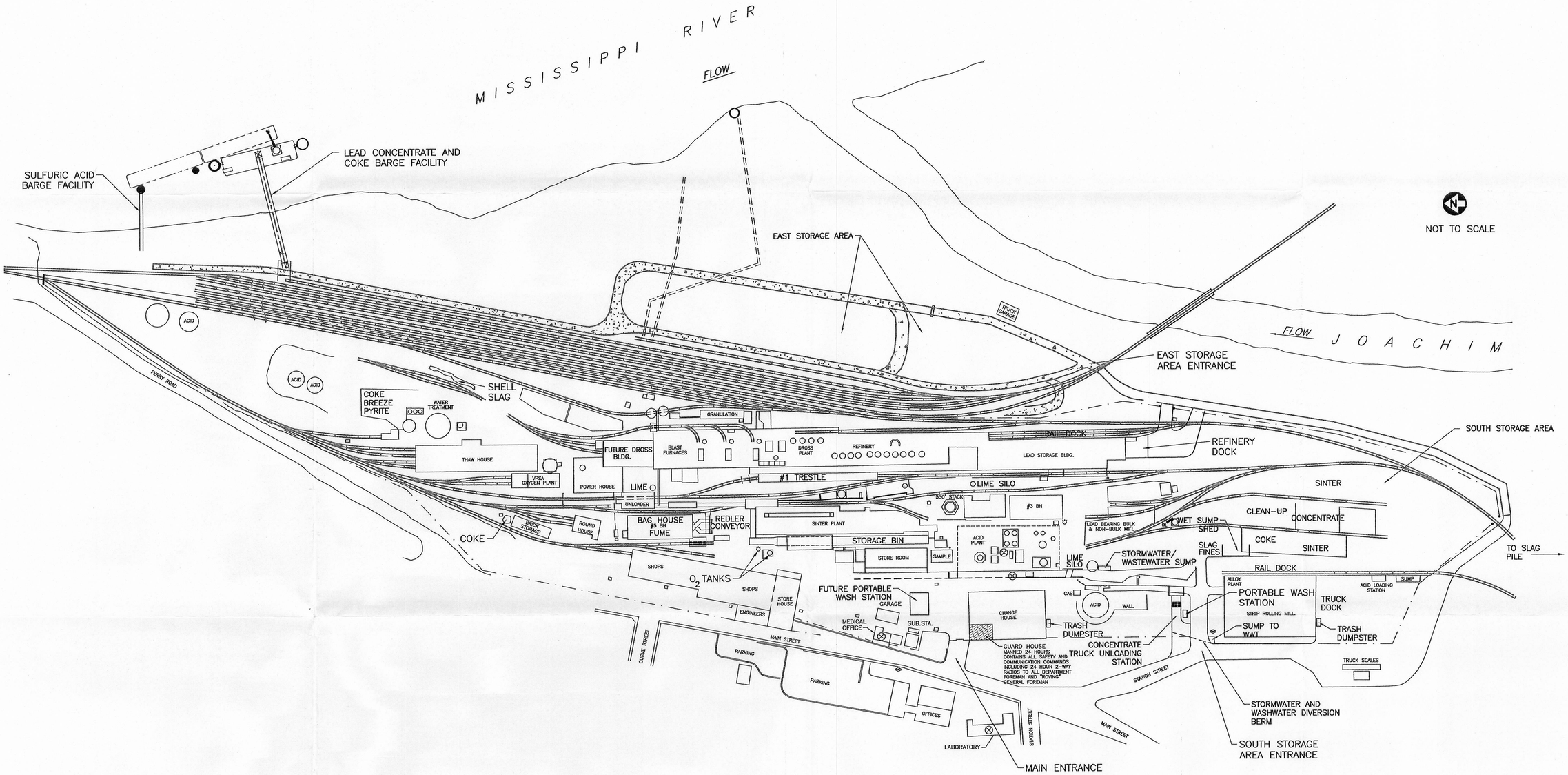
THE DOE RUN COMPANY
HERCULANEUM, MO

PLANT WET SWEEPING AREA

FIGURE 4

BARR PROJECT No. 25/51-018
CLIENT PROJECT No.
DWG. No.
REV. No.

JCCad M:\cad\25510181\CONTAMINATED_AREA_2.dwg Plot at 1900 03/25/2002 10:26:59



NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION

RELEASED TO/FOR: CLIENT ☐ BID ☐ CONSTRUCTION ☐

DATE RELEASED: A B C 0 1 2 3

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Scale	NTS
Date	6/23/03
Drawn	SDL
Checked	JYD
Designed	
Approved	

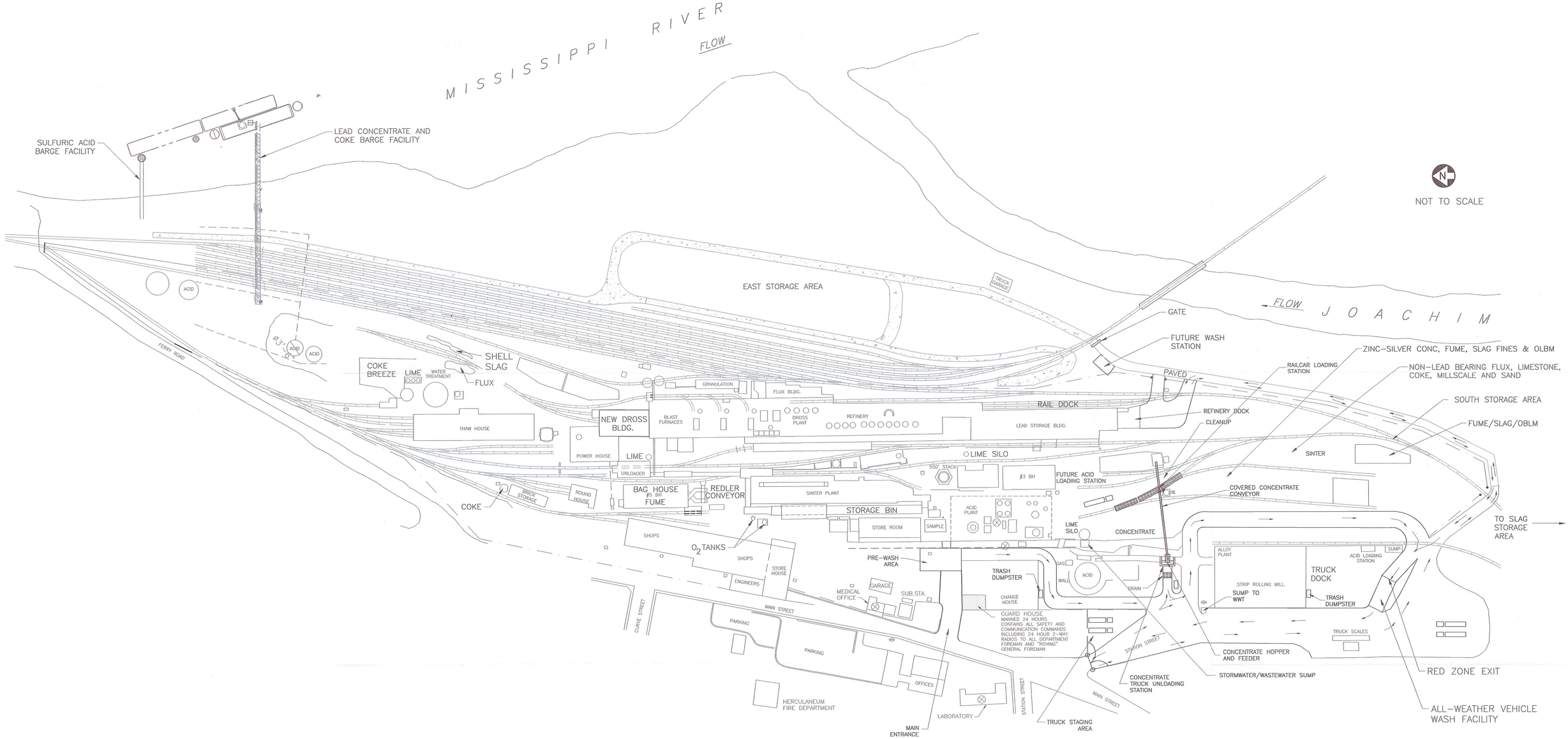
THE DOE RUN COMPANY
HERCULANEUM, MO

PLANT MATERIALS STORAGE LOCATIONS
EXISTING

FIGURE 5

BARR PROJECT No. 25/51-018
CLIENT PROJECT No.
DWG. No.
REV. No. –

I:\dgn\25510181\REVISED 6-20-03\FIGURE_5_REVISED.DWG Plot at 1600 06/23/2003 11:34:08



NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
1	SDL	JYD	JYD	06/23/03	ADDED TRUCK TO RAIL TRANSFER SYSTEM AND CHANGED LOCATION OF INTERNAL HAUL ROADS
2	TLM	TLM	JYD	04/15/04	MODIFIED/RELOCATED TRUCK TO RAIL TRANSFER SYSTEM AND CHANGED LOCATION OF INTERNAL HAUL ROADS

RELEASED TO/FOR: CLIENT | BID | CONSTRUCTION

DATE RELEASED: A B C 0 1 2 3

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Scale	NTS
Date	03/31/03
Drawn	SDL
Checked	JYD
Designed	
Approved	

THE DOE RUN COMPANY
HERCULANEUM, MO

PLANT MATERIALS STORAGE LOCATIONS
PROPOSED
FIGURE 5A

BARR PROJECT No. 25/51–018
CLIENT PROJECT No.
DWG. No.
REV. No. –

Appendices

Appendix A

Glossary

Appendix A

Glossary

Baghouse A structure utilized to filter air or the gas from a furnace. A baghouse typically consists of fabric bags arranged within an enclosure. The air is filtered as it passes through the fabric, and the particulate is left behind.

Baghouse Dust The particulate recovered from the baghouse. In lead smelting, the baghouse dust is returned to the process to allow recovery of the contained metals.

Barrings Barrings are the semi-metallic materials left from the blast furnace when it is taken off line. The barrings are recovered when the blast furnace is shut down.

BMP Best Management Practice

Blast Furnace The type of smelting furnace that produces lead metal from feed materials. The lead blast furnace consists of a refractory crucible at the bottom, with sides fabricated from water-cooled steel jackets. Coke provides the heat and reductant required by the furnace process, and serves to change the lead compounds in the feed to lead metal and slag.

Cleanup Material recovered during housekeeping within the plant, including demolition excavation material.

Coke Coke is coal that has been purified by heating. The heating process removes volatile matter, and produces a fused, porous material called coke. The coke used in the blast furnace is usually between 2 inches and 4 inches in diameter.

Concentrate An enriched collection of minerals produced from an ore. Lead Concentrate consists primarily of lead sulfide (galena), with some small amounts of zinc sulfide and copper sulfide. The concentrate also contains some of the rock that surrounded the ore vein.

Demo Materials Metal and other building materials recovered when obsolete structures are demolished.

Dross A solid material that collects on the surface of molten metal following a change in the metal's temperature. When hot lead from the blast furnace is cooled, other metals (such as copper) become less soluble. These metals solidify into solid compounds and float to the surface of the lead, where they are collected as dross.

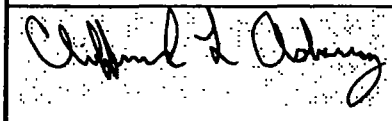
Flux	Compounds (including sand, limestone, and iron oxide) which become liquid during heating in the blast furnace.
Ore	A mineral or combination of minerals found naturally in nature. If the mineral is naturally concentrated, it may be economically extracted. Ore may consist of a vein of metallic sulfides (including lead sulfide) surrounded by limestone.
Refractory Materials	Compounds that do not readily decompose when exposed to high temperatures. Refractory brick is used in furnace construction.
Sinter	A hard porous material, resembling lava, which is produced by burning lead concentrate with slag and fluxes. The lead that is contained in sinter is present as lead oxide and lead silicate.
Sinter Machine	The apparatus that is used to burn lead concentrate with slag and fluxes. The sinter machine also removes sulfur from the lead concentrate.
Slag	A glass-like material produced during smelting. Slag contains the fluxes present in the sinter and the traces of limestone and other rock present in the lead concentrate. Slag dissolves metallic oxides (including zinc oxide) that are present in the sinter, and prevents material from accumulating in the blast furnace.
Smelting	A high temperature process in which a sinter feed material is reduced to lead, liquefied, and separated into metallic and non-metallic components. Sinter is smelted in the blast furnace, producing lead metal and slag.
Structural Controls	An NPDES storm water term used to describe permanent structures used to reduce, eliminate, or otherwise control the exposure of significant materials to storm water and storm water runoff. In this report, the scope of structural controls is expanded to address human health and the environment.
WWTP Sludge	Wastewater treatment plant sludge. Lime is added at the water treatment plant to remove metals that are dissolved in the wastewater. Sludge is the solid material that results from the lime addition.

Appendix B

Work Procedures
(Amended June 2003)

Information Only

DEPARTMENT TRAINING PROCEDURE

Document Name: Bulldozer		Document Number: DQP 199 003
Effective Date: 12/31/02	Revision No: NONE	Page 1 of 1
Review & Approval Signatures:		
		
		

1.0 PURPOSE

The purpose of this procedure is to explain the safe inspection and operation of a Bulldozer.

2.0 APPLICATION

This procedure applies to any and all employees or contractors certified as an operator on the Bulldozer and will be using this equipment.

3.0 SAFETY EQUIPMENT

Safety equipment requirements include hard hat, glasses, respirator, metatarsal boots, and gloves.

4.0 ENVIRONMENTAL

During operation of this equipment use established environmental guidelines and procedures to minimize fugitive emissions. While traveling and operating this equipment operator should take precautions to minimize airborne particulate.

5.0 ASSOCIATED MATERIALS

Dailey inspection forms, fuel and oils.

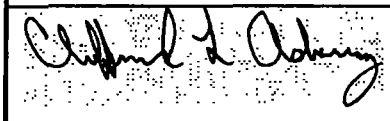
6.0 PROCEDURE

6.1 Before operation of this equipment, a daily inspection must be performed and an inspection sheet must be filled out. Necessary Repairs and fluid level issues must be addressed before operating the Bulldozer.

6.2 Forklifts are to be washed and cleaned as needed and engine areas must be kept clean of excess oils and grease to prevent fires.

Information Only

SMELTER QUALITY PROCEDURE

Document Name: Backhoe / Excavators	Document Number: DTP 199-002	
Effective Date: 12/31/02	**Revision No: NONE**	**Page 1 of 1**
Review & Approval Signatures:		
		
		

1.0 PURPOSE

The purpose of this procedure is to explain the safe inspection and operation of a Backhoe or Excavator.

2.0 APPLICATION

This procedure applies to any and all employees or contractors certified as an operator on the Backhoe/Excavator and will be using this equipment.

3.0 SAFETY EQUIPMENT

Safety equipment requirements include hard hat, glasses, respirator, metatarsal boots, and gloves.

4.0 ASSOCIATED MATERIALS

Dailey inspection forms, fuel and oils.

5.0 ENVIRONMENTAL

During operation of this equipment use established environmental guidelines and procedures to minimize fugitive emissions. While traveling and operating this equipment operator should take precautions to minimize air borne particulate.

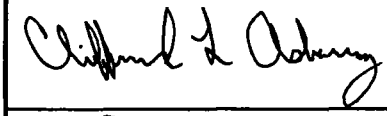
6.0 PROCEDURE

6.1 Before operation of this equipment, a daily inspection must be performed and an inspection sheet must be filled out. Necessary Repairs and fluid level issues must be addressed before operating the Backhoe or excavator.

6.2 Backhoe and Excavators are to be washed and cleaned as needed and engine areas must be kept clean of excess oils and grease to prevent fires.

Information Only

SMELTER QUALITY PROCEDURE

Document Name: Fork Lift	Document Number: DTP 199-004	
Effective Date:	**Revision No: NONE**	**Page 1 of 1**
Review & Approval Signatures:		
		
		

1.0 PURPOSE

The purpose of this procedure is to explain the safe inspection and operation of a Fork Lift.

2.0 APPLICATION

This procedure applies to any and all employees or contractors certified as an operator on a Fork Lift truck and will be using this equipment.

3.0 SAFETY EQUIPMENT

Safety equipment requirements are hard hat, glasses, respirator, metatarsal boots, and gloves will be required while operating this equipment.

4.0 ENVIRONMENTAL

During operation of this equipment use established environmental guidelines and procedures to minimize fugitive emissions. While traveling and operating this equipment operator should take precautions to minimize air borne particulate.

5.0 ASSOCIATED MATERIALS

Daily inspection forms, propane fuel and oils.

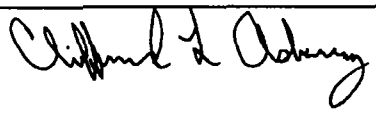
6.0 PROCEDURE

6.1 Before operating this equipment a daily inspection must be performed and an inspection sheet filled out. Necessary repairs and fluid level issues must be addressed before operating.

6.2 Forklifts are to be washed an cleaned as needed and engine areas must be kept clean of excess oils and grease to prevent fires.

Information Only

DEPARTMENTAL TRAINING PROCEDURE

Document Name: Front End Loader	Document Number: DTP 199-005	
Effective Date: 12/31/02	Revision No: NONE	Page 1 of 1
Review & Approval Signatures:		
		
		

1.0 PURPOSE

The purpose of this procedure is to give detailed information on the safe inspection and operation of a Front End loader.

2.0 APPLICATION

This procedure applies to any and all employees or contractors certified as an operator on a Front-end Loader and who will be using this equipment.

3.0 SAFETY EQUIPMENT

Safety equipment include hard hat, respirator, safety glasses, full metatarsal protective boots. These safety items are all provided by the company.

4.0 ENVIRONMENTAL

During operation of this equipment use established environmental guidelines and procedures to minimize fugitive emissions. While traveling and operating this equipment operator should take precautions to minimize air borne particulate.

5.0 ASSOCIATED MATERAILS

Daily inspection forms, fuel and oils.

6.0 PROCEDURE

6.1 Before operation of this equipment, a daily inspection must be performed and an inspection sheet must be filled out. Necessary repairs and fluid level issues must be addressed before operating the Front-end loader.

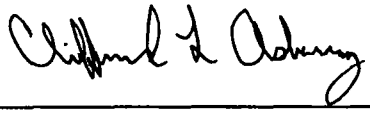
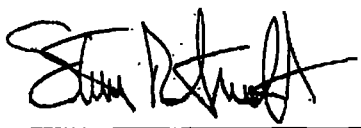
6.2 Front-end Loaders are to be washed and cleaned as needed and engine areas must be kept clean of excess oils and grease to prevent fires.

REFERENCES:

T&MH Plan Best Management Practices, June 2002

Information Only

DEPARTMENT TRAINING PROCEDURE

Document Name: Rail Car Handling	Document Number: DTP 163-001	
Effective Date: June 2002	Revision No: NONE	Page 1 of 1
Review & Approval Signatures:		
		
		

1.0 PURPOSE

The purpose of this procedure is to explain the safe inspection and operation of a Backhoe or Excavator.

2.0 APPLICATION

This procedure applies to any and all employees or contractors certified as an operator on the Backhoe/Excavator and will be using this equipment.

3.0 SAFETY EQUIPMENT

Safety equipment requirements include hard hat, glasses, respirator, metatarsal boots, and gloves.

4.0 ASSOCIATED MATERIALS

Dailey inspection forms, fuel and oils.

5.0 ENVIRONMENTAL

During operation of this equipment use established environmental guidelines and procedures to minimize fugitive emissions. While traveling and operating this equipment operator should take precautions to minimize air borne particulate.

6.0 PROCEDURE

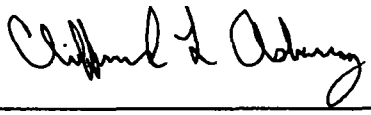
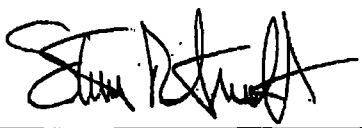
Follow the procedures listed in the Transportation and Material Handling Plan 4.0 Railroad Transportation Plan 4.1 – 4.5.4

Reference:

T&MH Plan 4.0 Railroad Transportation Plan, June 2002.

Information Only

DEPARTMENT TRAINING PROCEDURE

Document Name: Materials Handling	Document Number: DTP 163-002	
Effective Date: June 2002	Revision No: NONE	Page 1 of 1
Review & Approval Signatures:		
		
		

1.0 PURPOSE

The purpose of this procedure is to explain the safe inspection and operation of a Backhoe or Excavator.

2.0 APPLICATION

This procedure applies to any and all employees or contractors certified as an operator on the Backhoe/Excavator and will be using this equipment.

3.0 SAFETY EQUIPMENT

Safety equipment requirements include hard hat, glasses, respirator, metatarsal boots, and gloves.

4.0 ASSOCIATED MATERIALS

Dailey inspection forms, fuel and oils.

5.0 ENVIRONMENTAL

During operation of this equipment use established environmental guidelines and procedures to minimize fugitive emissions. While traveling and operating this equipment operator should take precautions to minimize air borne particulate.

6.0 PROCEDURE

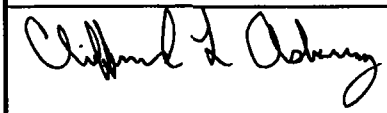
Follow the procedures listed in the Transportation and Material Handling Plan 6.0 Material Handling Plan 6.1 – 6.9

Reference:

T&MH Plan 6.0 Material Handling Plan, June 2002.

Information Only

DEPARTMENT TRAINING PROCEDURE

Document Name: Vehicle Cleaning and Inspection	Document Number: DTP 199 009	
Effective Date: June 2002	Revision No: NONE	Page 1 of 2
Review & Approval Signatures:		
		
		

1.0 PURPOSE

The purpose of this procedure is to give information on the correct method of cleaning a vehicle and performing an inspection on the vehicle after cleaning.

2.0 ENVIRONMENTAL

Environmental guidelines and procedures should be used at all times to minimize fugitive emissions. Precautions should be taken to minimize airborne particulate.

3.0 PROCEDURE

Follow the procedures listedn out in the Transportation and Material Handling Plan 3.1.5.3, 3.1.5.4, 3.1.5.5

REFERENCES:

FORM DTP 199 007-A Vehicle & Truck Inspection Sheet
T&MH Plan June 2002 3.1.5.3, 3.1.5.4, 3.1.5.5

Information Only

DEPARTMENT QUALITY PROCEDURE

Document Name: Unloader Procedure		Document Number: DQP163-003
Effective Date: 10/25/00	Revision No: 4	Page 1 of 2
Review & Approval Signatures:		

PURPOSE:

This procedure details the unloading of material at the unloader.

RESPONSIBILITY:

It is the responsibility of Services Department personnel to perform the task(s) defined in this procedure.

PROCEDURE:

1. Railroad cars are brought to the unloader by the engine crew, as directed by the Engine Crew Lineup Sheet, FORM DQP163-003-A. This form is prepared by Services supervision based upon railcar availability and sinter plant requirements. This form is prepared after the physical inventory is performed on the sinter plant mix room bins. *Commonly used materials may be pre-printed on the form, while those raw materials that vary a great deal may be hand written.*

2. The unloader may be operated by one or two people. An additional person works on the top floor of the sinter plant mix room. His job is to insure that the tripper is positioned over the proper bin for the material that is being unloaded.

3. Before unloading any material, the Unloader Control Room operator contacts the man in the upper mix room, to let him know what material is to be unloaded next. The man in the mix room positions the tripper over a bin for that material. Each bin has a sign at the top to indicate the bin number and type of material contained in that bin. The Unloader Line Up Sheet, FORM DQP163-003-B, is used to specify material unloaded that day. This form is prepared after the physical inventory is performed on the sinter plant mix room bins. *Commonly used materials may be pre-printed on the form, while those raw materials that vary a great deal may be hand written.*

4. The engine crew spots the car on the unloader. Cars already dumped and waiting to be dumped must clear the deck. Before dumping, cars must be checked and have cotter pins in the coupler knuckle pins.

5. Sound the siren three times and make sure the catwalk area and grizzly over the hoppers are clear of personnel. Do not dump cars if these areas are not clear of personnel.

6. Start the unloader.

7. After the rail car has been turned over, activate the vibrators for a few seconds to shake loose any material that has not fallen out. Push the down button to bring the rail car back down to track level.

8. Make sure the car goes all the way down before hooking up another car. Realign the coupler on the rail cars. Pull in the next car. Follow the steps outlined in 4 through 7 above. Turn on the hopper feeders to move material from the unloader hoppers to CV-1 conveyor belt.

9. After the cars of the same material have been dumped, allow the material to feed from the hoppers. You may also turn on the hopper vibrators to shake the material down. Some material may have to be blown down with air lances to empty the hoppers. Personnel going down onto the grizzlies to blow down must lock out the main unloader breaker located in the Unloader Control Room.

10. Contact the man in the upper mix room before dumping a different type of material. He moves the tripper to unload the next material in the proper bin.

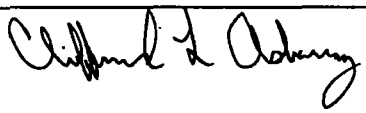
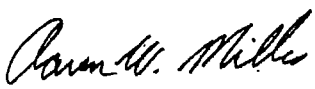
11. The engine crew line up sheet and unloader line up sheet are turned into Services Supervision at the end of each day.

REFERENCES:

Engine Crew Lineup Sheet, FORM DQP163-003-A
Unloader Line Up Sheet, FORM DQP163-003-B

Information Only

DEPARTMENT QUALITY PROCEDURE

Document Name: Truck Wash		Document Number: DQP185-400
Effective Date: 6/01/03	**Revision No: NONE**	**Page 1 of 2**
Review & Approval Signatures:		
		
		

1.0 PURPOSE

The purpose of this procedure is to explain how to prepare the truck wash for operation and to prevent freeze up of the system in cold weather.

2.0 APPLICATION

This procedure applies to all employees who may become involved with the operation of the truck wash start up or cold weather operation and shut down.

3.0 SAFETY EQUIPMENT

Safety equipment in this area include hard hat, respirator, safety glasses, gloves and full metatarsal protective boots. These safety items are all provided by the company.

4.0 ASSOCIATED MATERIALS

Flashlight, Crescent wrench

5.0 PROCEDURE

5.1 To set up truck wash for operation these tasks must be performed.

5.2 Check the main breaker circuit switch to:

5.3 Insure that it is in the off position then **lock it out, tag it out, and try it,** before performing task. Open drain petcock in the pump housing bottom section. The pump is located in side the pump and tank building, north end west side.

5.4 Close the filter drain ball valve it is located on the bottom of the filter housing. The filter is located on the east side of the pump motor in the pump and tank building.

5.5 Close the tank and pump supply valve. It is located on the south end of the pump supply line from the water storage tanks.

5.6 Close all eight spray line drain valves. They are located in the wash building on the east end of spray bar pipe lines, three ball valves on the north wall and two ball valves on the floor in the center east end of drain area.

5.7 Close the cold weather bleed gate valve and open the main water supply gate valve and the water storage tank supply gate valve to the water storage tanks.

These three valves are located on the north east side of the pump and tank building. The gate valve on the east side is the cold weather bleed valve. The north gate valve is the main water supply source (from number 3 baghouse) the south gate valve is the main water supply valve to the storage tanks.

5.8 Throw the main circuit breaker switch to the on position.

5.9 Observe the equipment operation, the solenoid valves should open and allow water to flow into the storage tanks. The green light on the wash building will be lit.

5.10 Test the system after water storage tanks are full. Step on the pressure switch hose, the pump should come on and water should spray out the spray tips. Inspect tanks, lines, filter, sprays, motor, and the pump if you encounter a problem.

6.0 CLEANING AND SHUT DOWN

6.1 Clean the truck wash building and floor drain area weekly. Clean the water filter and spray nozzles as needed.

6.2 To shut down system reverse steps 5.2 through 5.7

6.3 Truck wash should not be operated when temperatures are below 32 degrees. In cold weather operation the system may need to be shut down nightly and draining the system.

Note: You must leave the main circuit breaker in the on position to drain the water storage tank supply line.

Information Only

DEPARTMENT QUALITY PROCEDURE

Document Name: Truck Un-Loading Station and Wash Station	Document Number: DQP185-001	
Effective Date: 6/02/03	Revision No: NONE	Page 1 of 2
Review & Approval Signatures:		

1.0 PURPOSE

The purpose of this procedure is to explain the safe and environmentally correct operation of truck staging and unloading of trucks at the truck unloading station. Additionally to provide completion and collection of associated paperwork.

2.0 APPLICATION

This procedure applies to any and all employees, truck drivers or contractors performing work at this station.

3.0 SAFETY EQUIPMENT

Safety equipment requirements will change as to the location at the station. An employee that is performing work east of the fence will be considered inside the plant, and work performed on the west side of the fence will be considered outside the plant. Hard hats, glasses, respirator, shoes, and gloves may or may not apply, check with your supervisor before starting work. Additional safety goggles are required when compressed air is in use.

4.0 ASSOCIATED MATERIALS

Daily inspection forms, fire hoses, power washer, air lance and rubber boots. Tools also needed to perform sampling are sample spoon and 5 gallon pails with lids.

5.0 PROCEDURE

5.1 Trucks arriving at the plant will stage in the provided staging area. It is very important that we form one or two lanes and that we keep the trucks nose to tail when crowded conditions exist. Trucks can never park along public streets such as Station or Main. All Staging must be on company property.

5.2 Before trucks are given the go ahead to back up on the ramp. The area is to be inspected, to insure it is clean and ready to receive trucks.

5.3 Trucks will be backed onto the ramp and when stationed just short of the dump position. The driver will release the rear gate and wing nuts and release his own air brakes.

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5.4 At this point, a visual inspection of seal, wing nuts, air locks, lead deposits, etc. will be performed by attendant. Then the driver will finish backing up and dump his load.

5.5 Leaving the bed up, the driver will make a visual inspection to make sure none of the load is stuck in the truck.

5.6 Finding none the attendant will clean the tailgate and seal using the air lance. Any remaining lead concentrate inside the tailgate seal area will be removed by scraping and/or air brushed off prior to closing the tailgate. Also at this time the attendant will again do a visual inspection of the seal. The driver will then lower his bed.

5.7 The driver will then pull forward onto the grates. Then the driver will reseal tailgate wing nuts and apply air locks. Then trailer will have tailgate area and tires cleaned by the attendant.

5.8 After attendant inspects the truck they will collect scale ticket and a copy of truck condition report. (To which he adds the truck condition on arrival and leaving.)

5.9 Driver will then be instructed to exit the loading area.

6.0 CLEANING CHOICES WILL BE WEATHER AND MATERIAL CONDITIONS DRIVEN

6.0 Cleaning consists of using a pressure washer first then a fire hose to rinse all trailer tires, wheels, mud flaps, axels and under carriage. Truck wheels will be washed on an as needed basis.

6.1 Under wet weather or wet material conditions the pressure washer must be used to clean on and around tailgate seal.

6.2 Under dry conditions a broom or air lance may be used to clean the seal and tailgate.

6.3 Trucks leaving the South Gate will be fire hosed as a pre-wash then must go thru the truck wash, then they are to be rinsed with a fire hose again before leaving.

7.0 SAMPLING CONCENTRATES

7.1 After a truck dumps its load of concentrate and the attendant has performed procedure 5.3 the attendant will determine the mill the load came from. Then he will collect two samples from the sampling plate at the dumping station one spoonful of material (1/8 cup) will be placed in the daily composite pail. And another spoonful will be placed in the weekly composite sample pail for the mill it came from. All pails must remain covered at all times.

7.2 Make sure sample plate is clean before next load is allowed to dump.

7.3 At the end of each day after the unloading station closes. The pail containing the daily composite sample must be delivered to the lab building.

7.4 Any uncollected tickets should be delivered to the checking office at that time.

7.5 The weekly composite sample should be delivered to the sample room. A loader will pick up this sample at 3:30 p.m. every Friday and make that delivery.

Information Only

DEPARTMENT QUALITY PROCEDURE

Document Name: Lime Slurry Spray Preparation	Document Number: DQP185-100	
Effective Date:	**Revision No: NONE**	**Page 1 of 3**
Review & Approval Signatures:		

1.0 PREPARATION OF THE LIME SOLUTION AT THE "CADMIUM FACILITY":

1.1 Make sure the drain valve at the bottom of the middle mixing tank is closed.

1.2 Drop the line with the yellow washers on the end into the middle mixing tank through the gray tube. Open valve "C" to start filling the tank with plant water.

1.3 While the tank is filling use the north overhead crane to hoist lime to the second floor. Visually inspect the crane, make sure the crane is operational and that the cables are not frayed. Make sure the north crane doors are open and the guard rail is in place. Lower the white "bulk" bag to the ground and fill with seven (7) 50 pound bags of lime. Hoist the lime up to the second floor and position the lime near the yellow middle tank feed tube. Unhook the white bag and move the crane north out of the way. If there are no bags of lime located north of the Cadmium Facility, lime is also stored on pallets inside #3 baghouse.

1.4 When the water level in the middle tank reaches the yellow washers on the line, close valve "C" to turn off the water. This is approx. 3,500 gallons of water.

1.5 Remove the line and washers from the mixing tank. Roll up the line and store out of the walkway area as to not become a trip hazard.

1.6 Turn on the "Cementation Stirrer".

1.7 Close valve "A" and open valve "B" and turn on the "Cementation Pump". This will circulate the water and aid in mixing the lime solution.

1.8 Add seven (7) 50 pound bags of lime to the water in the middle mixing tank. Dump the bags one at a time. Allow the solution to mix approx. five (5) minutes between bags. After all of the bags have been dumped, allow the solution to mix at least an addition fifteen (15) minutes before pumping the solution to the outside holding tank.

1.9 The lime solution is now ready to be pumped to the water truck.

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2.0 PUMPING THE LIME SOLUTION FROM THE MIDDLE TANK TO THE WATER TRUCK:

Note: A vehicle inspection is to be performed at the start of every shift. A special inspection slip will be used to record the inspection results. This form will also double as a water truck daily travel log. This sheet is to be turned in at the end of each shift for the supervisor to review.

2.1 Park the water truck as close to the "Outside Holding Tank" as safely possible.
2.2 Insert the black "Holding Tank Hose" into the water truck tank, well past the metal end. Make sure the hose valve is ½ to ¾ open. DO NOT fully open the hose valve as it may blow out of the water truck tank.
2.3 Make sure the holding tank drain valve is closed.
2.4 Go upstairs. Make sure the black hose running from valve "A", to the funnel at the north west corner of the north press, is secured inside the funnel.
2.5 Turn off the cementation pump. Open valve "A" and close valve "B". Restart the cementation pump, this will pump lime solution to the outside holding tank.
2.6 When the holding tank contains approx. 250 gallons, turn off the cementation pump to stop the flow to the holding tank. By the time the lines drain the holding tank should contain approx. 300 gallons.
2.7 Close valve "A" and open valve "B". Restart the cementation pump to circulate the lime solution.
2.8 After pumping 300 gallons to the holding tank, turn on the "Outside Pump" to pump the lime solution to the water truck tank.
2.9 After all the lime solution has been pumped out of the holding tank, turn off the outside pump.
2.10 Using the fire hose attached to the plant water valve at the south west corner of the Cadmium Facility, fill the outside holding tank with 500 gallons of water to flush the holding tank and the outside pump. Insert the fire hose into the same funnel as the black valve "A" hose at the north west corner of the north press.
2.11 Go down stairs. Close the holding tank hose valve. Remove the black hose from the water truck tank. Make sure the hose is secured, so it will not whip around and go back up stairs. Turn on the outside pump and pump as much water as you can out of the holding tank, then turn off the outside pump. Go back down stairs. Open the holding tank drain valve and drain the remaining flush water from the holding tank.
2.12 The water truck is to be filled with lime solution and applied to the daily use stock piles by 4:00 P.M. daily.
2.13 The employee on the 9:00 A.M.- 5:00 P.M. shift will apply the lime solution to the face of all stock piles that are being disturbed on a daily basis. This will be done after 1:00 P.M.
2.14 After all of the lime solution has been pumped out of the water truck, the water truck must be flushed out by running at least 1,000 gallons of clean city water through the tank, spray bar and deck gun systems.
2.15 Pay attention to the water level in the middle tank. When the level drops below the impellers on the cementation stirrer, turn off the stirrer.

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3.0 FLUSHING THE "CADMIUM FACILITY"

3.1 After all of the lime solution has been pumped out of the middle tank, make sure both the cementation and outside pumps are turned off. Close valve "A" and open valve "B".

3.2 Lower the line with the black washers on the end, into the middle tank through the gray tube.

3.3 Open valve "C" and fill the middle tank with plant water until the water level touches the washers. This approx. 2,000 gallons of water.

3.4 Close valve "C" to turn off the plant water. Remove the line and washers from the tank. Roll up the line and store it out of the way so as to not become a trip hazard.

3.5 Turn on the cementation stirrer and let it run a couple of minutes to wash the lime solution from the impellers. Turn off the cementation stirrer.

3.6 Turn on the cementation pump and allow the flush water to circulate approx. five (5) minutes to flush valve "B" and the adjoining lines.

3.7 Turn off the cementation pump. Close valve "B" and open valve "A".

3.8 Go down stairs. Make sure the drain valve on the holding tank is closed. Insert the black holding tank hose into the water truck tank the same as in the afore mentioned procedures for filling the water truck with lime solution. Open the holding tank hose valve ½ to ¾ open. DO NOT fully open the hose valve, the hose may blow out of the water truck tank.

3.9 Go back upstairs. Turn on the cementation pump and pump 1,000 gallons of flush water to the holding tank. When the holding tank contains 1,000 gallons of flush water, turn off the cementation pump.

3.10 Turn on the outside pump and pump the flush water to the water truck tank. When the water truck tank is full, turn off the outside pump.

3.11 Go down stairs. Close holding take hose valve and open the holding tank drain valve. Remove the hose from the water truck tank and secure neatly and safely out of the way.

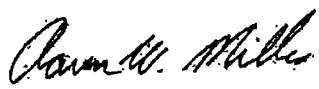
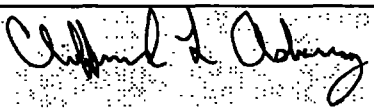
3.12 Empty the water truck by spraying the solution in the plant "RED ZONE" area on the south end of the plant.

3.13 Repeat this process until all of the flush water has been pumped from the middle tank and the holding tank. Then make sure the drain valves at the bottom of the middle tank and the bottom of the holding tank are open. This completes the Cadmium Facility flush process.

3.14 After the last of the Cadmium Facility flush water has been pumped out of the water truck, the water truck tank, spray bar and deck guns systems must be flushed with at least 500 gallons of clean city water.

Information Only

DEPARTMENT QUALITY PROCEDURE

Document Name: Environmental inside plant sweeper truck	Document Number: DQP185-004	
Effective Date:	**Revision No: NONE**	**Page 1 of 2**
Review & Approval Signatures:		
		
		

1.0 PURPOSE

The purpose of this procedure is to give information on the safe and proper operation of the inside plant sweeper truck.

1.1 There are several other procedures or policies listed below that may directly apply to the safe and proper operation of this sweeper.

1.2 General equipment procedures.

1.3 Equipment lock out and tag out procedures.

2.0 APPLICATION

This procedure applies to all environmental department employees, other departments employees or contractors who may have an opportunity to operate this sweeper.

3.0 SAFETY EQUIPMENT

Safety equipment needed to perform sweeper task are but are not limited to hard hat, respirator, safety glasses, ear plugs, gloves and company required safety foot wear. All safety equipment will be provided by the company.

4.0 ENVIRONMENTAL

During operation of this equipment use established environmental guidelines and procedures to minimize fugitive emissions. While traveling and operating this equipment the operator should take precautions to minimize airborne particulate.

5.0 OPERATING PROCEDURE

5.1 Operation of this equipment without certified training is NOT permitted.

5.2 Pre-trip inspections must be completed at the beginning of every day shift. Any problems must be corrected or supervisor approved before operating this equipment.

5.3 After checking the main engine, start that engine to raise the bed and check

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other fluid levels. Make sure you use the safety bar and put it away when inspection is completed.

5.4 Start auxiliary engine, selecting environmental mode using speed selector switch, for the initial start. Switch will illuminate with ignition switch on.
5.5 Water tank is only filled with city water at the north strip mill gate.
5.6 Select mid-position on *Ergo control located on top left of the center console.
5.7 Lower nozzle and select brush gear and water spray as required.
5.8 Commence sweeping.

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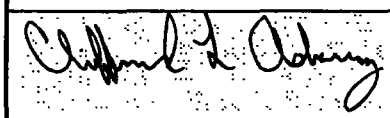
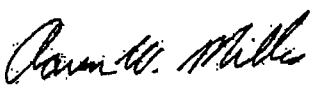
DEPARTMENT QUALITY PROCEDURE

Document Name: Wet Sweeper Truck	Document Number: DQP185-003	
Effective Date:	**Revision No: NONE**	**Page 1 of 2**
Review & Approval Signatures:		
		
		

1.0 PURPOSE

The purpose of this procedure is to explain the safe inspection, operation and storage of a wet sweeper truck.

2.0 APPLICATION

This procedure applies to any and all employees or contractors certified as an operator on a wet sweeper truck and will be using this equipment.

3.0 SAFETY EQUIPMENT

Safety equipment requirements will change as to the location the wet sweeper truck is being used. Hard hat, glasses, respirator, metatarsal boots, and gloves will be required in the plant but may not, while operating outside the plant.

4.0 ENVIRONMENTAL

During operation of this equipment use established guidelines and procedures to minimize fugitive emissions. While traveling and operating this equipment operator should take precautions to minimize airborne particulate.

5.0 ASSOCIATED MATERIALS

Daily inspection forms, fuel and oils.

6.0 PROCEDURE

6.1 Before operating this equipment a daily inspection must be performed and an inspection sheet filled out. Necessary repairs and fluid level issues must be addressed before operating.

6.2 Wet sweeper is to be washed and cleaned as needed and the engine areas must be kept clean of excess oils and grease to prevent fires.

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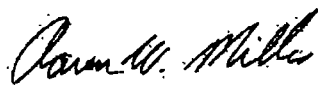
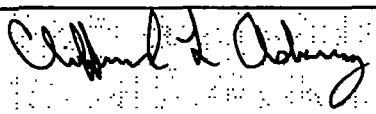
6.3 Fill water tank at the north strip mill gate city fire hydrant or city water connection on the north east corner of the thaw house. You must use city water only in the wet sweeper. Wet sweep in all areas of the plant assigned to the wet sweeper truck.

6.4 Wet sweeper truck should be stored under the lean too in the main courtyard during warm weather and in the strip mill building when temperatures are expected to be near freezing or below.

Information Only

DEPARTMENT QUALITY PROCEDURE

Document Name: Dry Sweeper on City Streets	Document Number: DQP185-002	
Effective Date: 6/30/02	**Revision No: NONE**	**Page 1 of 2**
Review & Approval Signatures:		
		
		

1.0 PURPOSE

The purpose of this procedure is to explain the safe inspection, operation, and storage of a dry sweeper truck.

2.0 APPLICATION

This procedure applies to any and all employees or contractors certified as an operator on a dry sweeper truck and anyone who will be using this equipment.

3.0 SAFETY EQUIPMENT

Safety equipment requirements will change as to the location the dry sweeper is being used. Hard hat, glasses, respirator, metatarsal boots, and gloves will be required in the plant but may not, while operating outside the plant.

4.0 ENVIRONMENTAL

During operation of this equipment use established environmental guidelines and procedures to minimize fugitive emissions. While traveling and operating this equipment the operator should take precautions to minimize airborne particulate.

5.0 ASSOCIATED MATERIALS

Daily inspection forms, fuel, and oils.

6.0 PROCEDURE

6.1 Before operating this equipment a daily inspection must be performed and an inspection sheet filled out. Necessary repairs and fluid level issues must be addressed before operating.

6.2 Dry sweeper is to be washed and cleaned as needed and the engine areas must be kept clean of excess oils and grease to prevent fires.

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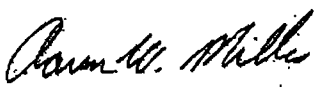
6.3 Every afternoon sweeper storage compartment must be emptied to prevent over loading.

6.4 Dry sweeper truck should be stored under the lean too in the main courtyard during warm weather and in the strip mill building when temperatures are expected to be near freezing or below.

Information Only

DEPARTMENT QUALITY PROCEDURE

Document Name: Water Truck		Document Number: DQP185-001
Effective Date: 6/30/02	**Revision No: NONE**	**Page 1 of 2**
Review & Approval Signatures:		
		
		

1.0 PURPOSE

The purpose of this procedure is to explain the safe inspection and operation of a water cannon style water truck.

2.0 APPLICATION

This procedure applies to any and all employees or contractors certified as an operator on this water truck and will be using this equipment.

3.0 SAFETY EQUIPMENT

Safety equipment requirements will change as to the location the water truck is being used. Hard hat, glasses, respirator, metatarsal boots, and gloves will be required in the plant but may not while operating outside the plant.

4.0 ENVIRONMENTAL

During operation of this equipment use established environmental guidelines and procedures to minimize fugitive emissions. While traveling and operating this equipment the operator should take precautions to minimize airborne particulate.

5.0 ASSOCIATED MATERIALS

Dailey inspection forms, fuel and oils.

6.0 PROCEDURE

6.1 Before operation of this equipment, a daily inspection must be performed and an inspection sheet must be filled out. Necessary Repairs and fluid level issues must be addressed before operating the water truck.

6.2 Water truck is to be washed and cleaned as needed and engine areas must be kept clean of excess oils and grease to prevent fires.

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6.3 Fill water truck at north strip mill gate city fire hydrant or city water connection on the north east corner of the thaw house. Wet down all areas in the plant assigned to the water truck. You must use city water only in the water truck.

6.4 Water truck is to be stored under lean too in main court yard during the summer and in the strip mill building when temperatures are expected to be near freezing or below.

Information Only

SMELTER QUALITY PROCEDURE

Document Name: Traffic Control	Document Number: DTP 199-008	
Effective Date: 12/31/02	Revision No: NONE	Page 1 of 4
Review & Approval Signatures:		

1.0 PURPOSE

The purpose of this procedure is to explain the safe and environmentally responsible way route traffic in and out of the facility.

2.0 APPLICATION

This procedure applies to any and all employees or contractors who travel into and out of the plant.

3.0 SAFETY EQUIPMENT

Safety equipment requirements include hard hat, glasses, respirator, metatarsal boots, and gloves.

4.0 ENVIRONMENTAL

During transport use established environmental guidelines and procedures to minimize fugitive emissions. While traveling into and out of the area precautions should be taken to minimize airborne particulate and to avoid tracking any material out of the plant.

5.0 ASSOCIATED MATERIALS

6.0 PROCEDURE

Follow the procedures listed out in the Transportation and Material Handling Plan **3.1.5 Best Management Practice 3.1.5.2**

REFERENCE:
T&MH Plan June 2002 3.1.5 Best Management Practice 3.1.5.2

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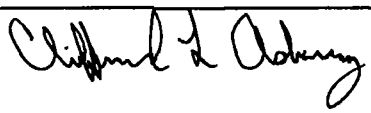
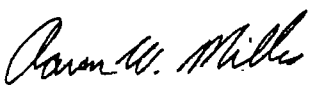
SMELTER QUALITY PROCEDURE

Document Name: Spill Response		Document Number: DTP 185-010
Effective Date: 12/31/02	**Revision No: NONE**	**Page 1 of 1**
Review & Approval Signatures:		
		
		

1.0 PURPOSE

To define the clean-up responsibilities in case of a spill.

2.0 PROCEDURE

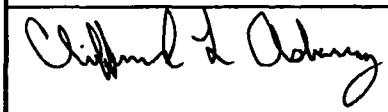
In the event of a spill, the carrier is responsible for providing cleanup response. The Doe Run Company will provide oversight and assistance to ensure the area is properly and adequately cleaned.

3.0 RESPONSIBILITY

The carrier is responsible for providing the cleanup response in the event of a spill.

Information Only

SMELTER QUALITY PROCEDURE

Document Name: Plant Cleanup and Maintenance	Document Number: DTP 199-011	
Effective Date: 12/31/02	Revision No: NONE	Page 1 of 1
Review & Approval Signatures:		
		
		

1.0 PURPOSE

The purpose of this procedure is to explain the safe and environmentally responsible way route traffic in and out of the facility.

2.0 APPLICATION

This procedure applies to any and all employees or contractors who travel into and out of the plant.

3.0 SAFETY EQUIPMENT

Safety equipment requirements include hard hat, glasses, respirator, metatarsal boots, and gloves.

4.0 ENVIRONMENTAL

During transport use established environmental guidelines and procedures to minimize fugitive emissions. While traveling into and out of the area precautions should be taken to minimize airborne particulate and to avoid tracking any material out of the plant.

5.0 ASSOCIATED MATERIALS

6.0 PROCEDURE

Follow the procedures listed out in the Transportation and Material Handling Plan **6.8 Plant Cleanup and Maintenance 6.8.1- 6.7.5**

REFERENCE:
T&MH Plan 6.8 Plant Cleanup and Maintenance, June 2002

SMELTER QUALITY PROCEDURE

Document Name: Skid Steer Loader	Document Number: DTP 199- 001	
Effective Date: 13/31/03	Revision No: NONE	Page 1 of 3
Review & Approval Signatures:		

1.0 PURPOSE

The purpose of this procedure is to give detailed information on the safe inspection and operation of a skid steer loader.

2.0 APPLICATION

This procedure applies to any and all employees or contractors certified as an operator on a skid steer loader and will be using this equipment.

3.0 SAFETY EQUIPMENT

Safety equipment in this area include hard hat, respirator, safety glasses (Face shields may be required when handling wet material), ear plugs, gloves, and full metatarsal protective boots. These safety items are all provided by the company.

4.0 ENVIRONMENTAL

During operation of this equipment use established environmental guidelines and procedures to minimize fugitive emissions.

5.0 PROCEDURE

4.1 EQUIPMENT CHECKLIST

Fill out a pre-operating check list for mobile equipment (see Mobile equipment procedures) and then check each item below. Notify your Supervisor of any defects or missing items.

A. Seat belt and buckles
B. Roll-over cage (Check for cracks or breaks)
C. Side shields
D. Warning lights
E. Back up alarm
F. Check for broken or worn parts

G. Check tires and rims for cuts, bulges or low air pressure.
H. Fuel level
I. Oil levels (hydraulic and engine)
J. Check for oil leaks
K. Check engine cooling system
L. Check cab area for trash or loose objects
M. Check parking brake

4.2 START-UP CHECKLIST

A. "Buckle-up" and Start-up
B. Check oil pressure
C. Check coolant temp
D. Check travel - forward and reverse
E. Check steering - right and left turn
F. Check bucket and boom - fully raised and lowered, fully tilted and level.
G. Check throttle operation - accelerate...to...slow
H. Become familiar with operation before starting the job. Report any problems to your Supervisor.
I. Check the work area. Be aware of low beams, tight working areas or damaged surfaces. Under NO circumstances should work be done around underground or overhead electrical lines. also DO NOT operate in a tightly enclosed area.
J. When re-fueling, Never fuel a running bobcat. Shutdown engine, then re-fuel. Whip off spilled fuel BEFORE restarting engine.

4.3 OPERATING GUIDE LINES

A. Never overload the bucket.
B. Never work on or repair a running bobcat.
C. Never dismount a running bobcat.
D. Never permit riders.
E. Never stand under the bucket - empty or loaded.
F. Never dismount with boom or bucket elevated - lower both to the ground.
G. Never operate control unless properly seated.
H. Never travel with boom fully raised.
I. Never race, stunt drive, or horse play.
J. Never use bucket as a man lift.
K. Always reduce speed with pedestrians present.
L. Keep hands and feet inside cab.
M. Use extreme caution when working in unlevel areas.
N. Round all corners and blind spots with caution.
O. Back up cautiously and slowly.
P. Report any accidents to your Supervisor when they occur.
Q. When traveling in snow or ice with an empty bucket, point the bucket edge toward the ground. This will enable you to drop the bucket, in the event the equipment would start sliding.

4.4 SHUTTING DOWN THE EQUIPMENT

A. Allow engine to idle for 3-5 minutes for proper cooling and lubrication.
B. Set the parking brake.
C. Lower boom and bucket to the ground.
D. Make check of equipment. Report any problems to Supervisor for repair.

5.0 SAFETY AND HYGIENE

5.1 Every employee is an environmental manager and responsible for controlling emissions and environmental concerns within his or her work area.

5.2 Always take the time to do the job safely. No one expects you to take unnecessary risk.

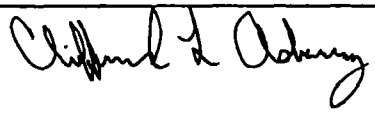
5.3 Know the Job you are doing, if in doubt, ask questions. Don't risk injury by using unfamiliar machinery or equipment which you know nothing about.

5.4 When working in an area other than your own abide by the safe practices of that area as well as your own good judgment.

5.5 All injuries, no matter how slight, must be reported to your Supervisor immediately. any injury requiring more than simple first aid must be reported to the medical office.

Information Only

.SMELTER QUALITY PROCEDURE

Document Name: Training Procedure		**Document Number:** SQP 4.18-3
Revision Date: June 2002		**Page 1 of 2**
Review & Approval Signatures:		
		
		

PURPOSE:

The purposes of this procedure *is* ~~are~~ to define the methods used to specify the minimum job qualifications and job specific skills requirements of smelter employees, and to identify and provide for the training needs of smelter personnel who perform tasks that affect the quality of the smelter's products.

SCOPE:

This procedure applies to the Smelting Division's employees.

RESPONSIBILITY:

It is the responsibility of Smelter Managers and Supervisors, *and Corporate Sales & Marketing Managers to monitor* ~~monitoring~~ individual's performance and assignment to assure that training needs are identified and met. It is the responsibility of Human Resources personnel to maintain the minimum qualifications and job requirements for smelter employees.

PROCEDURE:

Position qualifications and skills are determined and/or identified as described in DQP182-001, Position Qualifications & Skills Requirements Procedure. Salary employee's training needs assessment is done annually by the employee's manager or supervisor. Hourly employee's training needs assessment is done on an ongoing basis by each employee's supervisor. Employee training is achieved through the steps defined in SQP 4.18-3-A, Training Procedure. *Supervisors determine the method and record of training as described in department DQPs (Task Training Lists).* Training records of smelter personnel are recorded and maintained as defined in SQP 4.18-4, Procedure for Maintaining Training Records.

DRC personnel responsible for decontaminating vehicular traffic entering and exiting the plant will receive specific training. This training will include the importance of cleaning the vehicles, the procedures for cleaning, inspections, records, etc.
DRC personnel operating the wet street sweepers will receive training on operation of the sweeper; importance of maintaining and following designated routes within the

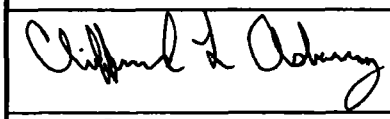
facility; following the designated schedule for cleaning specific areas or routes; and reasons why the wet plant sweepers are not to be used outside of the plant.
All DRC Herculaneum personnel receive training on the hazards associated with lead and how to minimize their exposure, as well as best management practices for handling lead and metal bearing materials, including utilization of appropriate personal protective equipment

REFERENCES:

QP 4.18, Training
T&MH Plan Best Management Practices 3.1.5.1
T&MH Plan Best Management Practices 3.3.2.2

Information Only

SMELTER QUALITY PROCEDURE

Document Name: Management Review Procedure		Document Number: SQP 4.1-1
Revision Date: June 2002		Page 1 of 1
Review & Approval Signatures:		
		
		

PURPOSE:

The purpose of this procedure is to provide instructions for management review of the Smelter quality system.

SCOPE:

This procedure applies to smelter management personnel who participate in the Quality System Management review process.

RESPONSIBILITY:

It is the responsibility of the ISO Management Representative to coordinate the review process for the smelter quality system, and to assure that reviews are performed twice per year, or more frequent if needed. *It is the responsibility of the Environmental Manager to coordinate the review process for the smelter, Transportation and Materials Handling Plan and to assure that reviews are performed once per year, or more frequent if needed.*

PROCEDURE:

The quality system review process is conducted as outlined in Management Review Flow Chart, SQP 4.1-1-A. *The elements of the quality system are reviewed during the ISO Management Review meetings. Those elements include, but are not limited to:*

- *Quality Policy, Goals and Objectives*
- *Quality Planning (Review of Smelter projects that affect the Quality System)*
- *Customer Complaints & Returns*
- *Results of Corrective and Preventive Actions*
- *Results of Internal Audits*
- *ISO Management Representative's Performance Report of the Quality System (effectiveness and adequacy of the system)*
- *New and/or additional need(s) for Statistical Techniques*

Plant management will review the Transportation and Materials Handling Plan annually to determine its effectiveness. The review will include analytical testing and data assessment, structural controls, best management practices, and work instructions. If necessary, additional sampling and testing will be scheduled. Structural controls and best management practices not meeting expectation or not providing adequate control will be updated. Where appropriate, designated alternative or new structural controls and best management practices will be implemented.

REFERENCES:

QP 4.1, Management Responsibility
FORM SQP 4.1-1-A, Quality System Effectiveness Check List
T&MH Plan 3.1.5.11 June 2002

Appendix C

Records/Certificates
(Amended June 2003)

Appendix C

The Doe Run Company
Vehicle /Truck Inspection Sheet

This inspection and release form certifies that this Vehicle /Truck is clean prior to leaving the plant site "Red Zone". My signature on this form certifies that I have inspected the area of this Vehicle /Truck listed below, and that it is clean prior to leaving.

	Initial on line
Vehicle /Truck Cleanliness (bumpers, tailgate, wheels, tires, fenders, fender wells, mud flaps, accessible undercarriage of truck and cargo box or trailer if necessary)	_____
Truck tarped properly "if applicable"	_____

Signature of Smelter Representative_____

Date_____ **Time**_____

Vehicle Identification _____

Give top copy to driver send the bottom copy to the environmental department mailbox.
Form SQP 4.22-3-A
C:\AOC\Truck Inspection

The Doe Run Company
Vehicle /Truck Inspection Sheet

This inspection and release form certifies that this Vehicle /Truck is clean prior to leaving the plant site "Red Zone". My signature on this form certifies that I have inspected the area of this Vehicle /Truck listed below, and that it is clean prior to leaving.

	Initial on line
Vehicle /Truck Cleanliness (bumpers, tailgate, wheels, tires, fenders, fender wells, mud flaps, accessible undercarriage of truck and cargo box or trailer if necessary)	_____
Truck tarped properly "if applicable"	_____

Signature of Smelter Representative_____

Date_____ **Time**_____

Vehicle Identification _____

Give top copy to driver send the bottom copy to the environmental department mailbox.
Form SQP 4.22-3-A
C:\AOC\Truck Inspection

Appendix C

COPY

The Doe Run Company
Bulk Truck Inspection Sheet

This inspection and release form certifies that this bulk tractor and trailer are clean and free of loose material prior to leaving the plant site. My signature on this form certifies that I have inspected the areas of this truck listed below, and that any loose material has been removed prior to leaving the plant. I further certify that this truck has been inspected, is not loaded beyond its legal weight limit and meets the following criteria:

TRUCK CLEANLINESS: (sides, tires, wheels, tailgate, frame, steps, top rails, undercarriage, mud flaps, etc.)	Leave SEMO	Arrive Smelter	Leave Smelter
Loose Material Removed	_____	_____	_____
Load Securely & Completely Tarped	_____	_____	_____
Tailgate Securely Latched & Sealed Shut (wing nuts, pin)	_____	_____	_____
Placards on 4 sides	_____	_____	_____
Truck Washed	_____	_____	_____
	_____	_____	_____

Mill: Buick _____ Fletcher _____ Brushy Creek _____ Sweetwater _____

Smelter: Glover _____ Herculaneum _____ Buick Resource _____

DATE	TIME	TRUCK NUMBER	SCALE TICKET NUMBER

Signature of Mill Representative _____

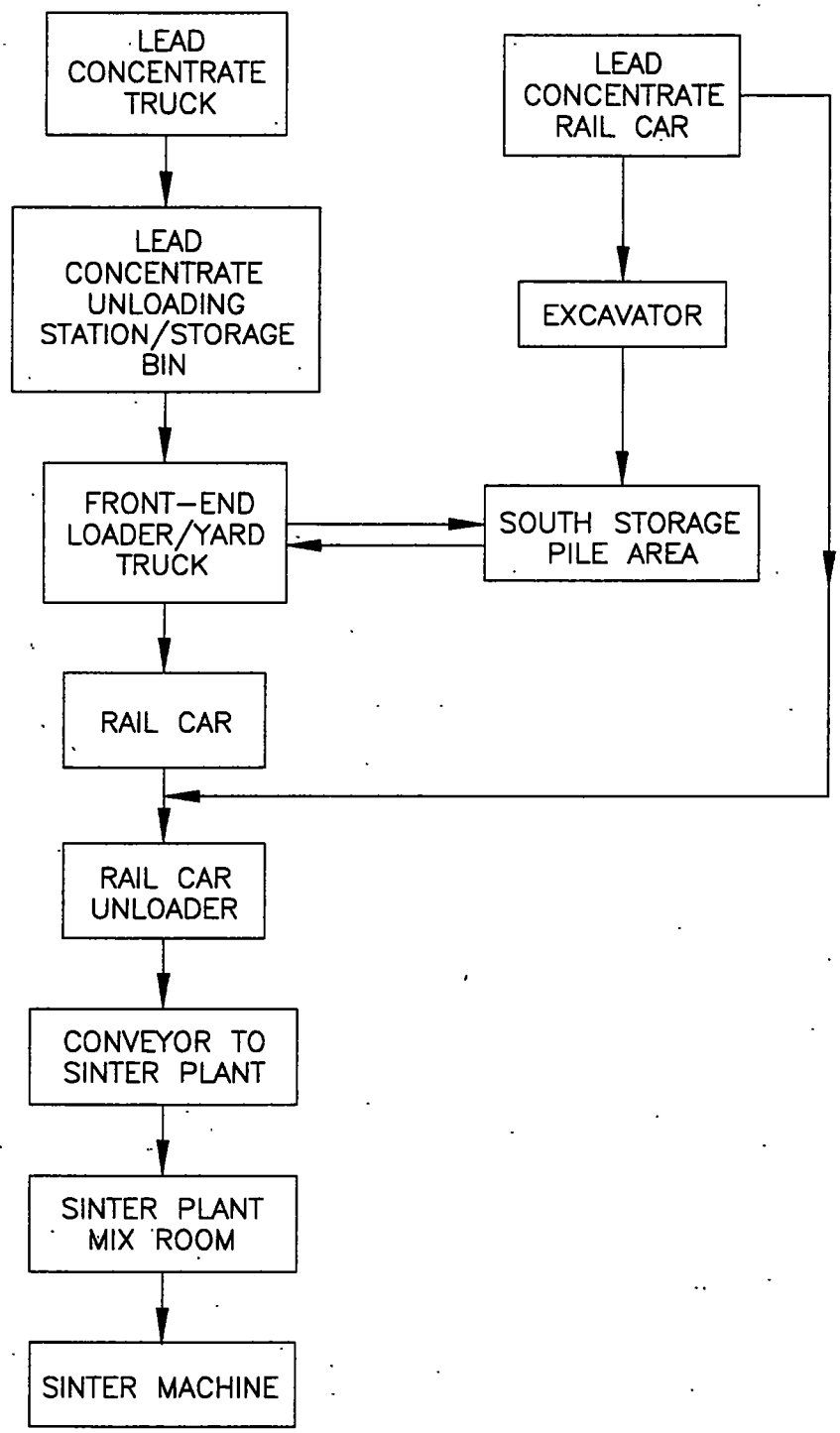
Signature of Truck Driver _____

Signature of Smelter Representative _____

(WHITE COPY – Attach to truck ticket YELLOW COPY – Carrier Copy PINK COPY – SEMO Copy)

Appendix D

Materials Handling Flow Charts



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Corporate Headquarters:
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Project Office:
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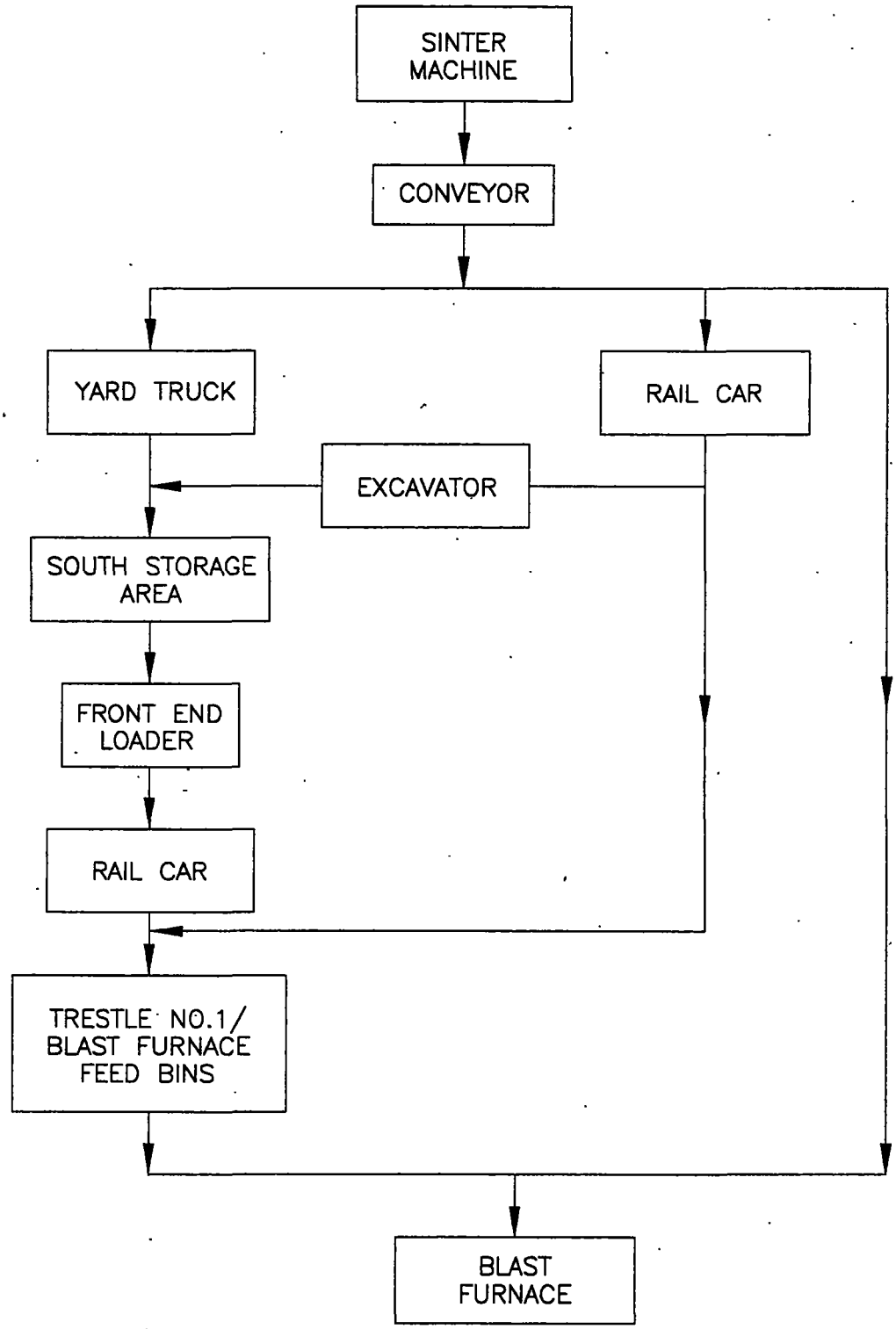
Ph: 1-888-324-3933
Fax: (573) 636-5323
www.barr.com

Scale	NTS
Date	5/13/02
Drawn	SDL
Checked	GTP
Designed	
Approved	

THE DOE RUN COMPANY
HERCULANEUM, MO

LEAD CONCENTRATE
MATERIAL FLOW DIAGRAM

BARR PROJECT No. 25/51-018
DWG. No.
SHEET No. D-1
REV. No. -



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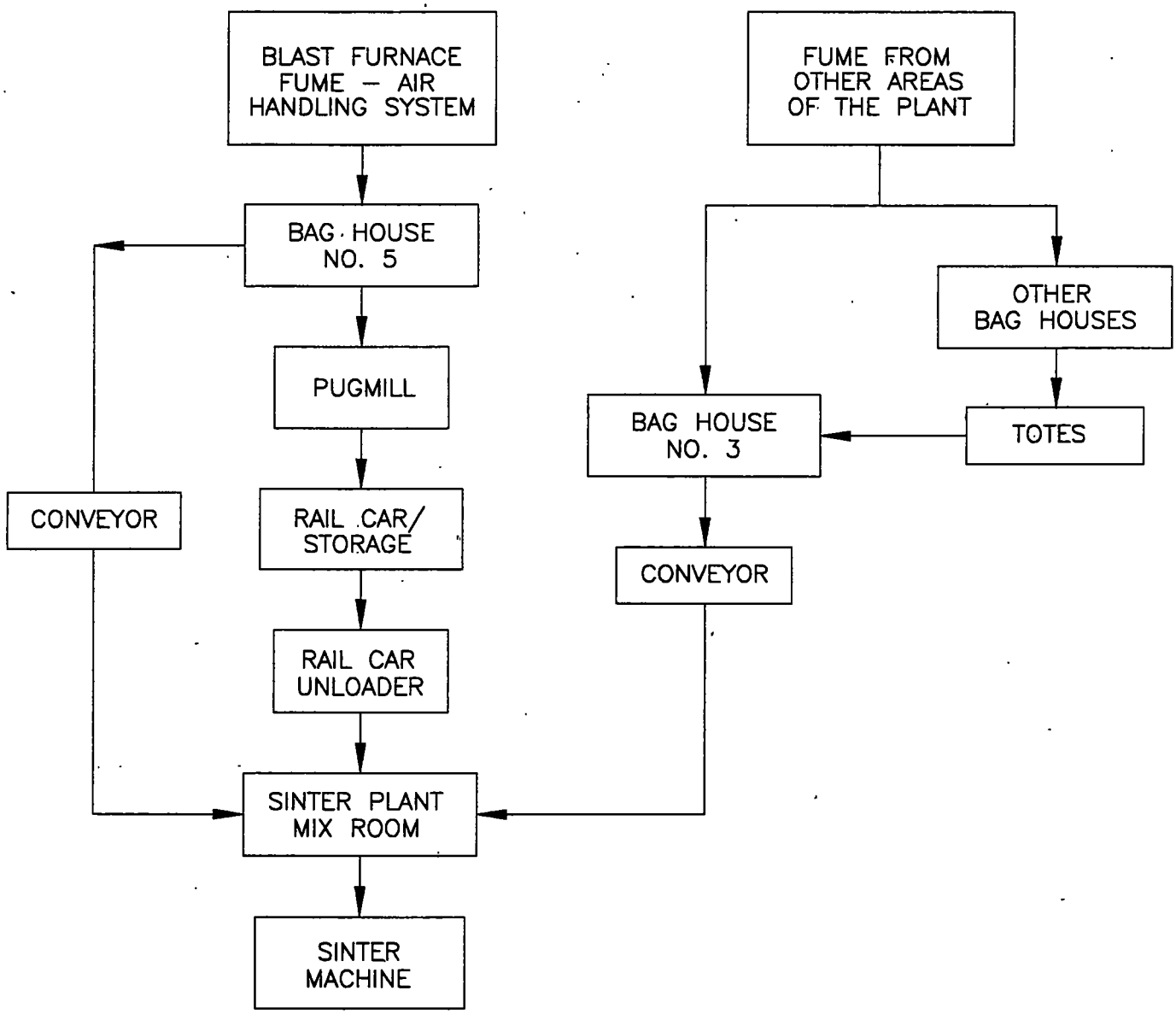
Designed	
Approved	-2

THE DOE RUN COMPANY
HERCULANEUM, MO

SINTER MATERIAL FLOW DIAGRAM

BARR PROJECT No. 25/51-018
DWG. No.
SHEET No. D-2
REV. No. -



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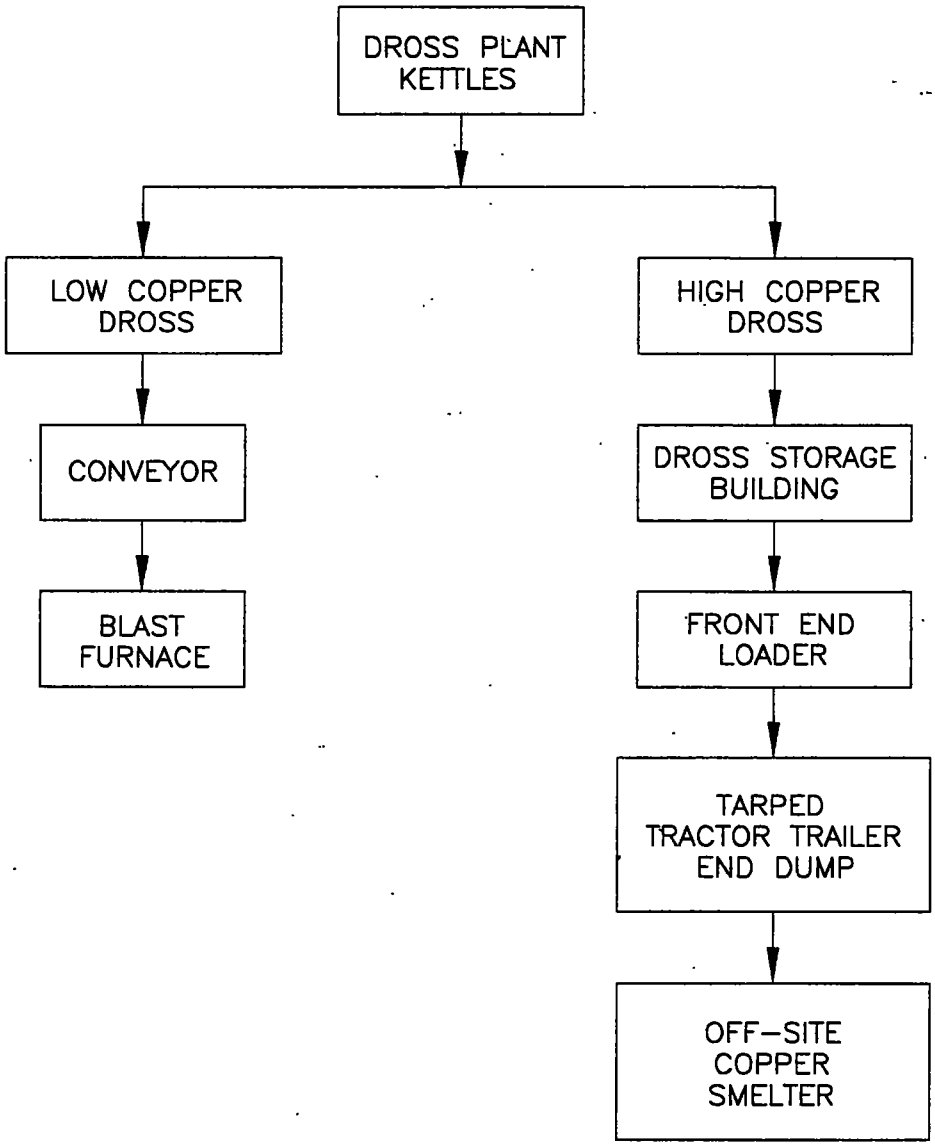
Approved	

THE DOE RUN COMPANY
HERCULANEUM, MO

FUME MATERIAL
FLOW DIAGRAM

BARR PROJECT No. 25/51-018
DWG. No.
SHEET No. D-3
REV. No. –



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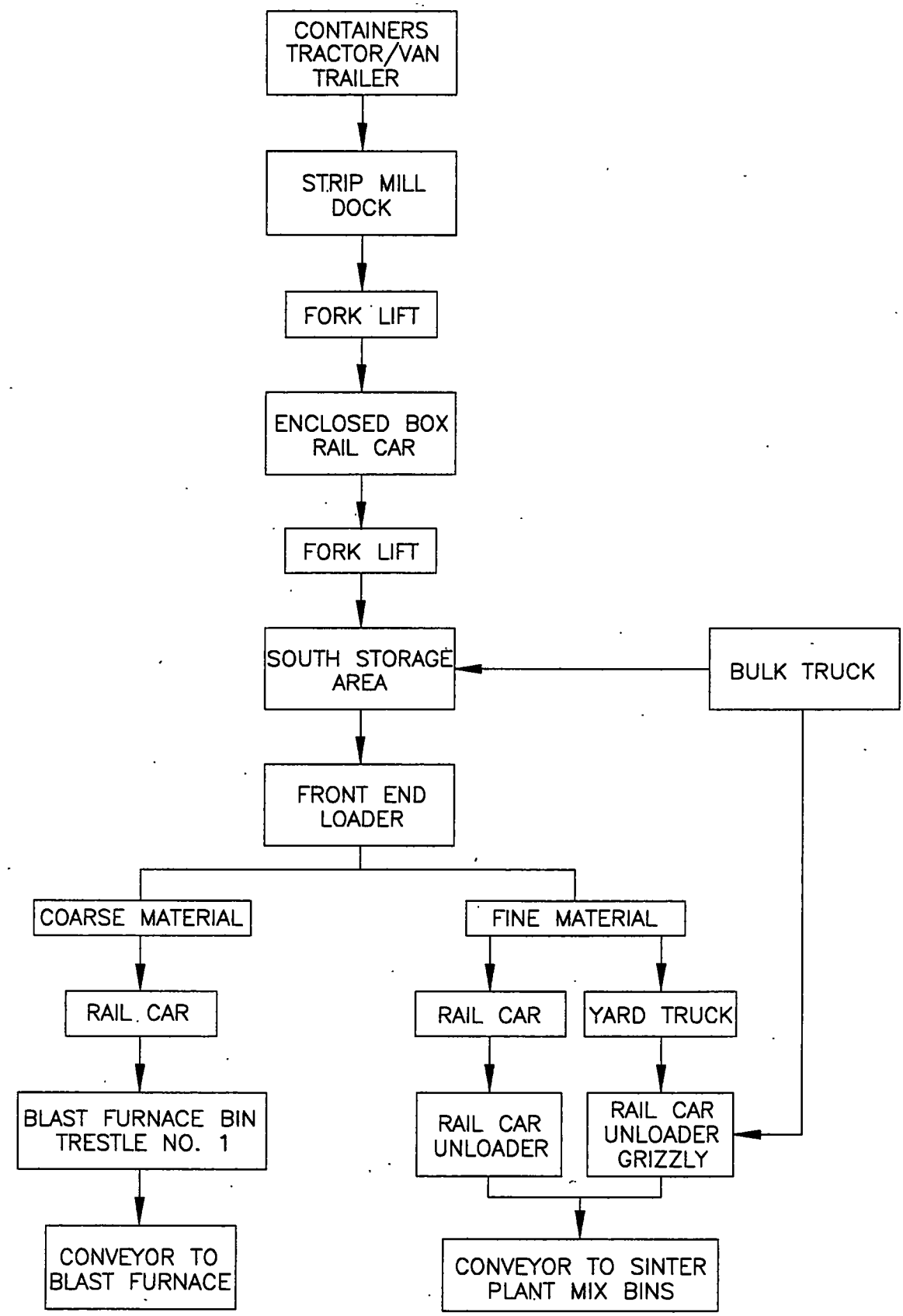
Designed	
Approved	

THE DOE RUN COMPANY
HERCULANEUM, MO

DROSS MATERIAL FLOW DIAGRAM

BARR PROJECT No. 25/51-018
DWG. No.
SHEET No. D-4
REV. No. -



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Date	5/13/02
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Checked	GTP
Designed	
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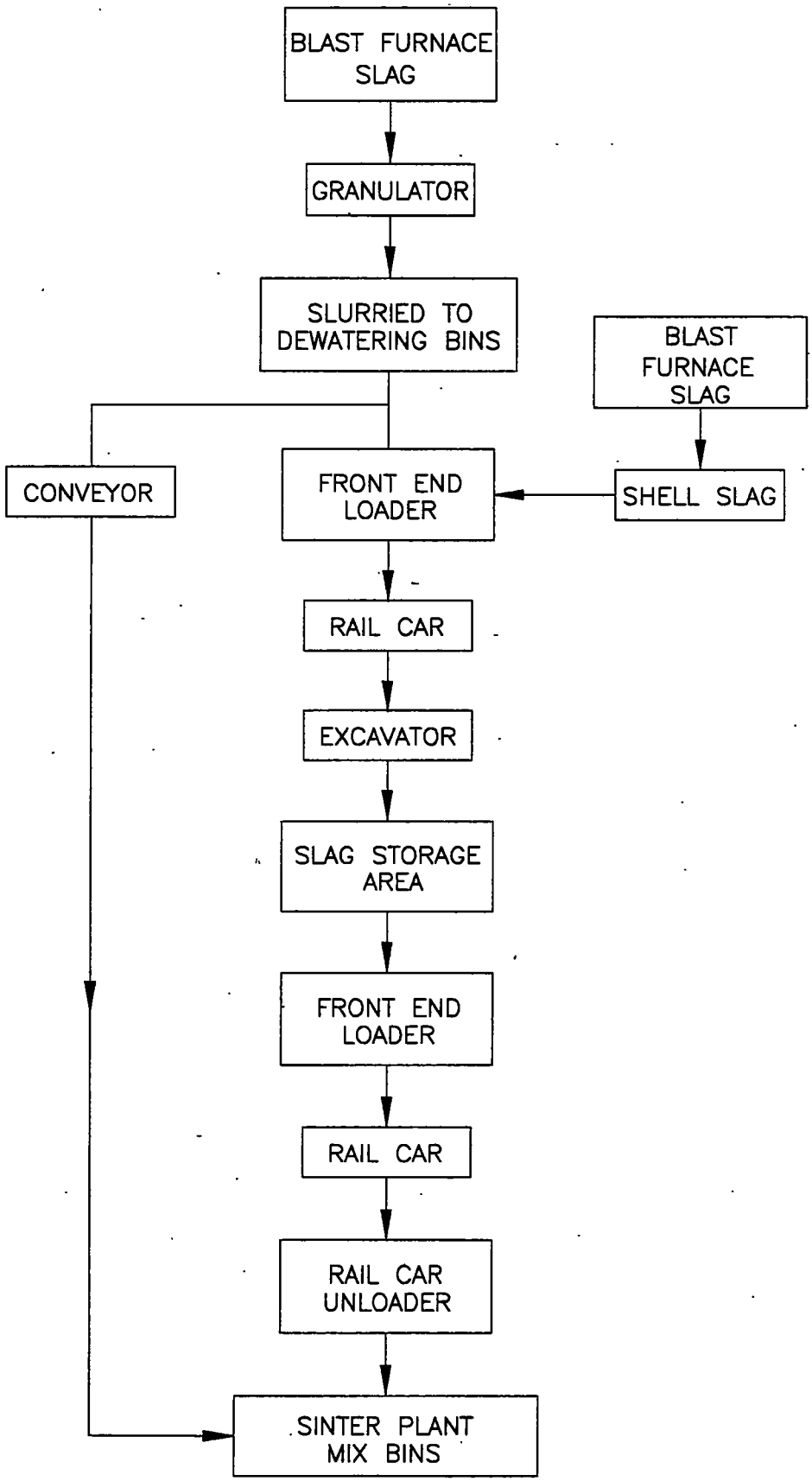
THE DOE RUN COMPANY
HERCULANEUM, MO

LEAD BEARING FLUX
MATERIAL FLOW DIAGRAM

BARR PROJECT No. 25/51-018
DWG. No. -
SHEET No. D-5
REV. No. -



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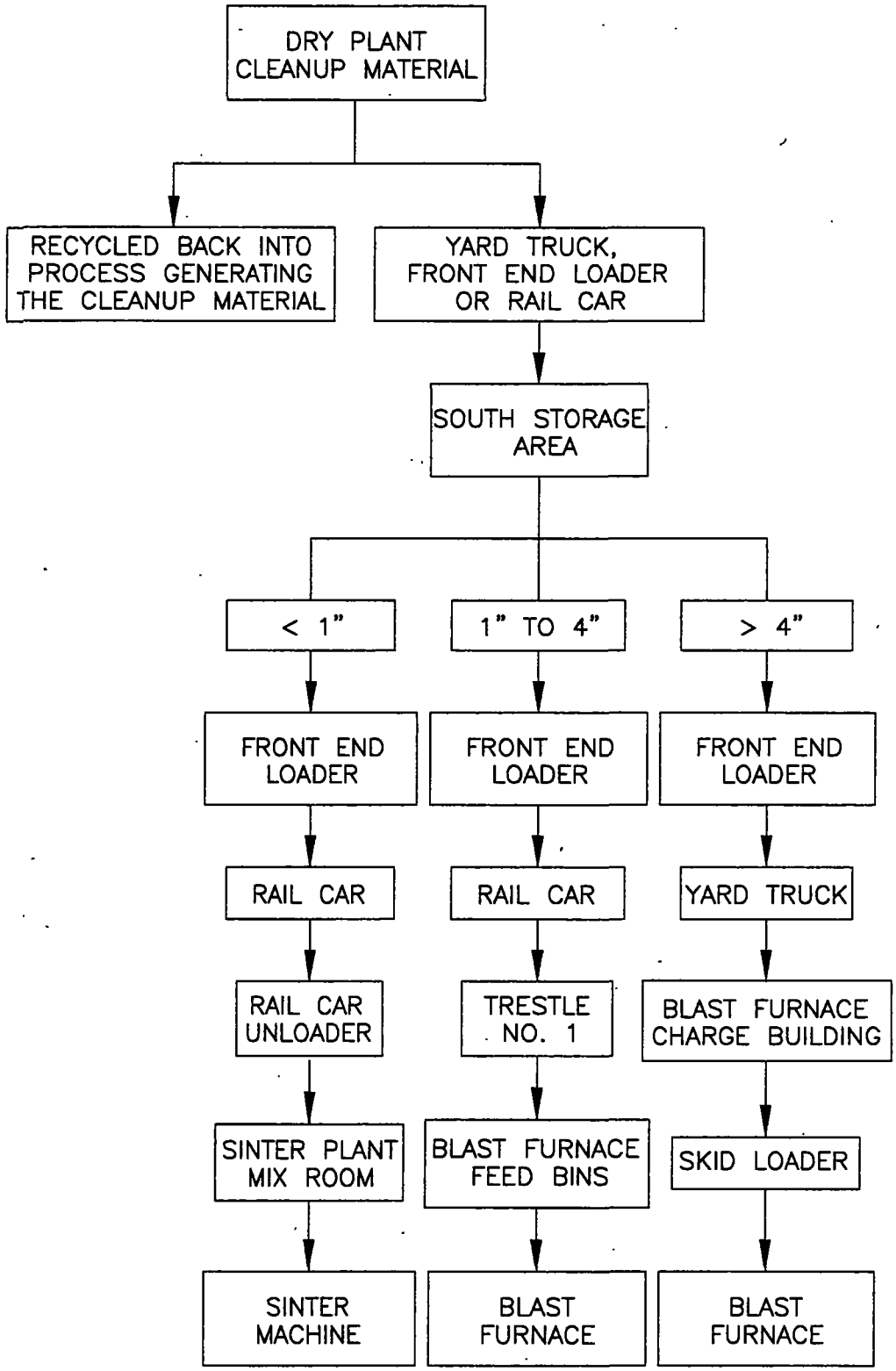
Approved	

THE DOE RUN COMPANY
HERCULANEUM, MO

SLAG MATERIAL FLOW DIAGRAM

BARR PROJECT No. 25/51-018
DWG. No.
SHEET No. D-6
REV. No. -

MISCELLANEOUS DRY PLANT CLEANUP MATERIAL



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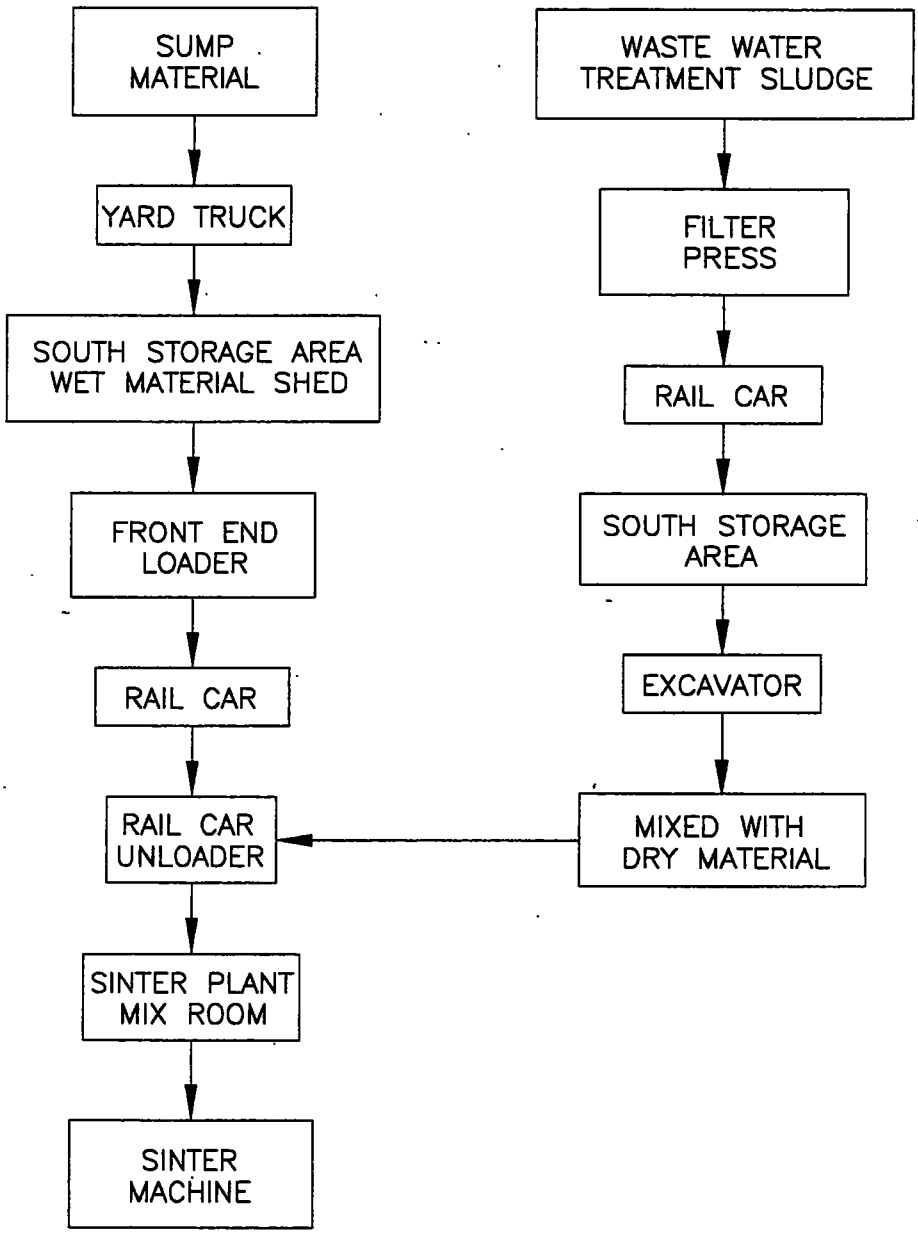
Approved	

THE DOE RUN COMPANY
HERCULANEUM, MO

PLANT CLEANUP & MAINTENANCE MATERIAL FLOW DIAGRAM

BARR PROJECT No. 25/51-018
DWG. No.
SHEET No. D-7.1
REV. No. -

WET CLEANUP MATERIAL: SUMPS & WASTE WATER SLUDGE



JCCad M:\cad\2551018\Appendix_D7_2.dwg Plot at 1 05/23/2002 09:20:16

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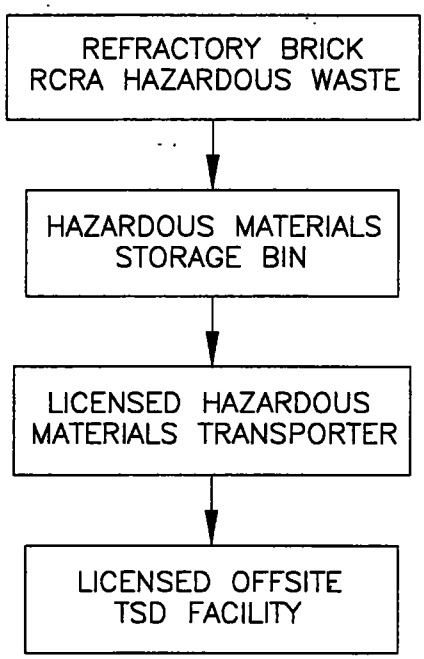
Scale	NTS
Date	5/13/02
Drawn	SDL
Checked	GTP
Designed	
Approved	

THE DOE RUN COMPANY
HERCULANEUM, MO

PLANT CLEANUP & MAINTENANCE
MATERIAL FLOW DIAGRAM

BARR PROJECT No. 25/51-018
DWG. No.
SHEET No. D-7.2
REV. No. -

RCRA HAZARDOUS WASTE MATERIAL



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Scale	NTS
Date	5/13/02
Drawn	SDL
Checked	GTP
Designed	
Approved	

THE DOE RUN COMPANY
HERCULANEUM, MO

PLANT CLEANUP & MAINTENANCE
MATERIAL FLOW DIAGRAM

BARR PROJECT No. 25/51-018
DWG. No.
SHEET No. D-7.3
REV. No. -

Appendix E

Street Sampling Protocol (Amended June 2002)

Appendix E

Street Sampling Protocol

Sampling protocol will follow, as closely as possible, the procedure used by the EPA contractor. Separate locations will be laid out for sampling. The locations will be marked so retests can be done in the exact same location and each of the locations will be an area of known size so results can be related to the square footage area.

A dust collection sample filter attached to a HEPA vacuum will be used for collecting dust. A new sample filter will be used for each sample. Doe Run will lay out a 3 ft. x 3 ft. area to be vacuumed and sampled. The area will be vacuumed over in one pass. Samples will be identified and stored in a lab bag until analyzed. This method will be used to confirm spill cleanup effectiveness.

Equipment Used

Dust Collection Sample Filter	Part No. FAB-07-03-006PS
1.245" x 4" Inlet Nozzle	Part No. 924-MV-18-004N
HEPA Vacuum VACOMEGAH	950-AI-00-120
Portable Generator	

Sample Analysis

ICP: Method ASTM 3050 B for soils and sludge will be used to find the percent Pb.

Final Information

1. Initial Result
   - Percent Pb
   - Mg Pb per square foot

2. Final Result
   - Analysis result in mg Pb/ft^2 is compared to established standard as confirmation that the road surface is adequately clean.

THE DOE RUN COMPANY
Herculaneum Smelting Division
ISO 9002 Certified

Aaron Miller
Environmental Manager
amiller@doerun.com

December 28, 2003

Mr. Bruce Morrison
USEPA Region VII
901 North 5th
Kansas City, KS 66101

Re: Transportation and Materials Handling Plan

Dear Bruce:

Enclosed you will find engineer drawings of the proposed lead concentrate truck unloading station for the Herculaneum Smelter. As discussed in my December 4th letter, Doe Run will install a hopper/feeder in the existing truck unloading station. The lead concentrate trucks will unload into the hopper/feeder that will feed concentrate onto a covered conveyor belt. The covered conveyor belt will extend east inside the plant where the concentrate will be conveyed into railcars. This will significantly reduce the need to store lead concentrate on the ground and in turn reduce the potential for fugitive emissions from concentrate handling. This set of tracks is entirely within the plant and once implemented, railcars of lead concentrate will not have to cross the East Road.

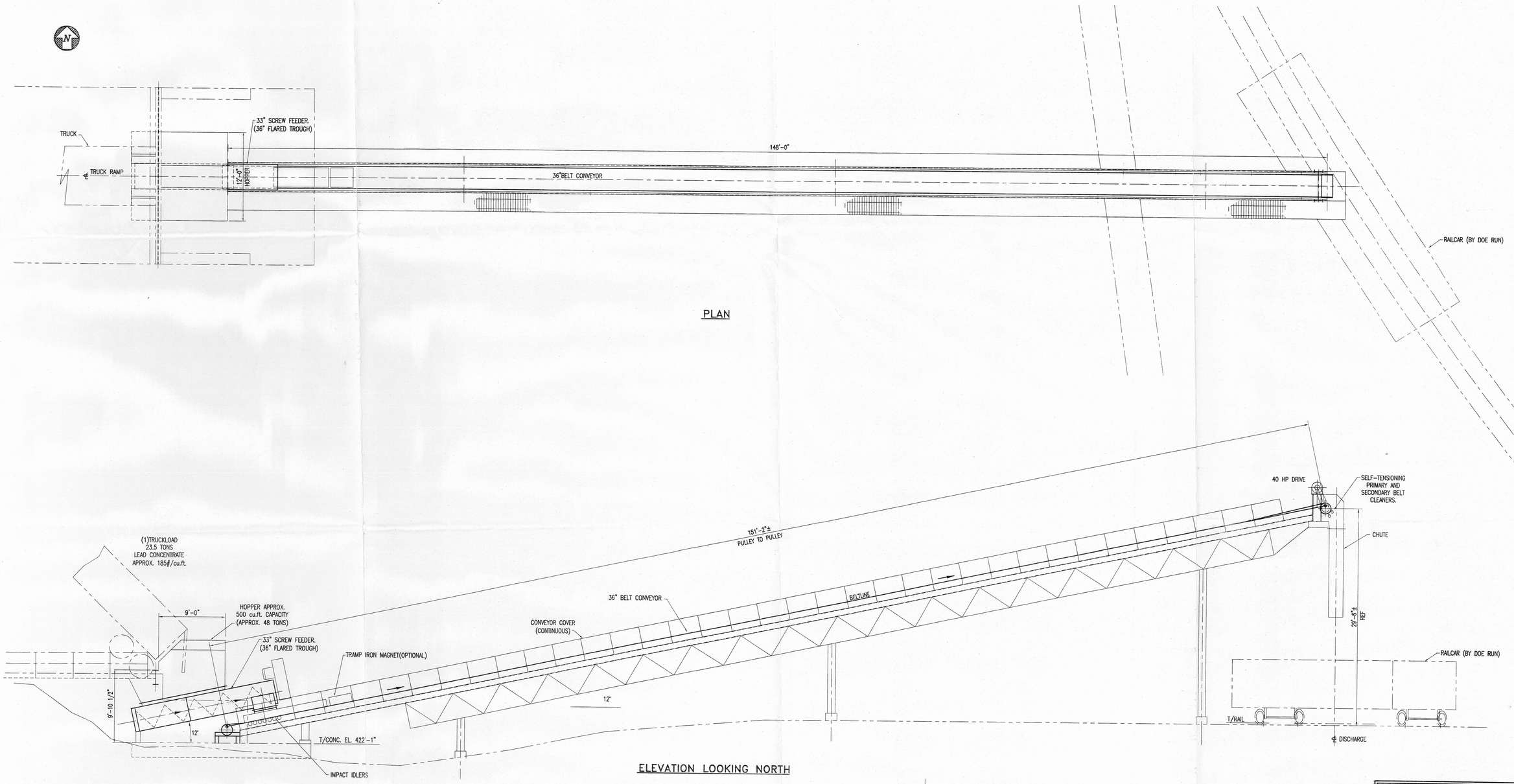
If you have any questions please contact me at 636/933-3180. We appreciate the opportunity to work together, and by working together we can continue to make Herculaneum better tomorrow than today.

Sincerely,

Aaron W. Miller
Environmental Manager
Primary Smelting

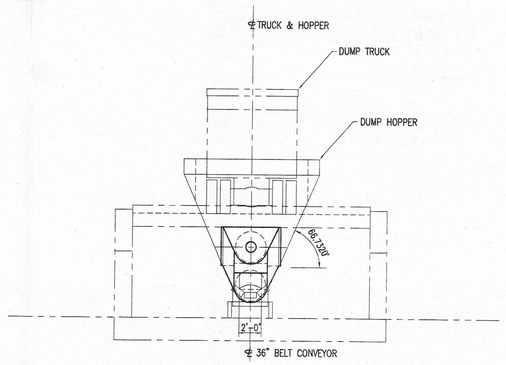
cc: Clifton Gray, The Doe Run Company / without enclosures
Bob Hinkson, MDNR / with enclosures

881 Main Street, Herculaneum, MO 63048
Telephone: 636-933-3180
Fax: 636-933-3150



PLAN

ELEVATION LOOKING NORTH



ELEVATION LOOKING WEST
33" SCREW FEEDER.
(36" FLARED TROUGH)

MATERIAL CONVEYED
LEAD CONCENTRATE
185#/cu.ft. (VOLUME)
275#/cu.ft. (POWER)
FEEDER RATE – 200 TPH
BELT CONVEYOR RATE – 250 TPH
BELT CONVEYOR SPEED – 200 FPM

PRELIMINARY
NOT FOR CONSTRUCTION

PENTA ENGINEERING CORP.
1807 Park 270 Drive, Suite 500, St. Louis, MO 63146-4034
Phone 314-878-0123 * Fax 314-878-0120

DWG.NO.	REFERENCE DRAWING
162-840-03010	TRUCK TO RAIL TRANSFER – SITE PLAN
X	

#	DATE	BY	REVISIONS
A	17DEC03	PJJ	ISSUED AS PRELIMINARY

THE DOE RUN COMPANY
881 MAIN ST., HERCULANEUM, MO. 63048

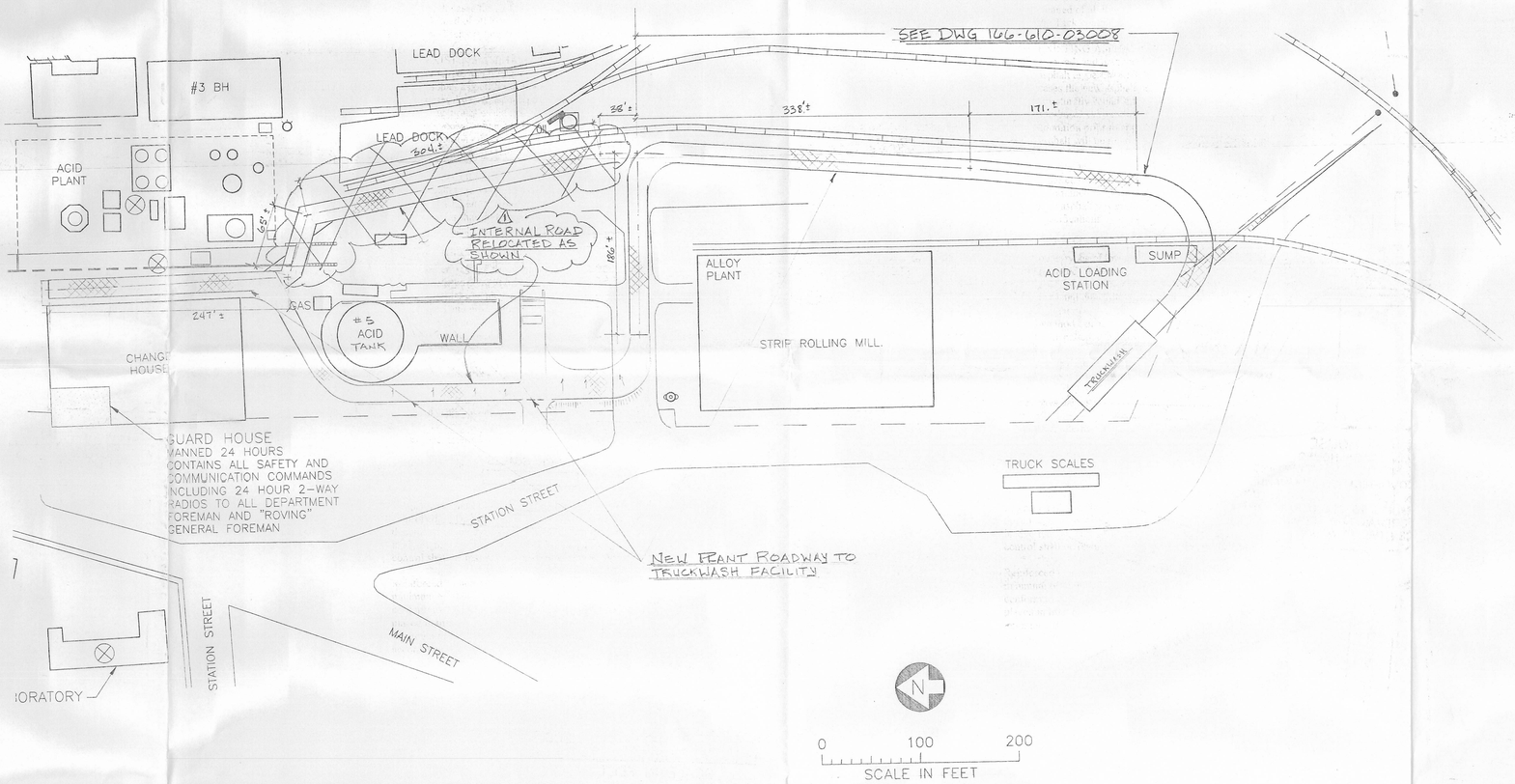
YARD DEPARTMENT

TRUCK TO RAIL TRANSFER

GENERAL ARRANGEMENT – PLAN AND ELEVATIONS

SCALE	DRAWN BY:	CHECKED BY:	JOB NO.
3/16 IN.=1 FT.	P. JONES		
	DATE: 8DEC03	DATE:	

DWG. NO. 162-840-03011-A



CONSTRUCTION NOTES:

1. Road grades and elevations are to be set using the top of floor elevation at the center of the East roll-up door of the Strip Mill at 415'6" as the official benchmark.

2. Roadway base will be over existing asphalt, old concrete, or over newly prepared sub-base:

   a. In all cases the surface of existing pavement shall be thoroughly cleaned of all loose dirt, dust, and debris prior to application of the Tack coating and subsequent asphalt pavement.

   b. EXISTING ASPHALT: Existing asphalt shall be cleaned, repaired, and prepped to receive a new continuous layer of asphalt as per the sectional drawings and specifications. In all cases the new asphalt pavement shall be applied to a structurally sound sub-base that allows uniform loadings to the sub-base. Any and all discontinuities shall be repaired to sound condition prior to application of new pavement. All loose asphalt will be removed prior to application of new pavement.

   c. OLD CONCRETE: Broken or recessed concrete shall be repaired or replaced to a structurally sound condition as determined by Doe Run Co.'s Engineer. After proper repair, new asphalt pavement shall be applied in accordance with specifications.

   d. NEWLY PREPARED SUBGRADE: Topsoil, large rocks and other types of low quality, unsuitable soil shall be removed and replaced. The subgrade shall be properly shaped to the desired sections and elevation and shall be compacted so that it is firm, hard and unyielding. It shall be compacted to 95% of dry weight density as determined by AASHTO Designation T-99 Method. Base aggregate, slab base, and asphalt pavement shall be installed as per drawings and specifications.

3. Asphalt pavement mix and specification will be provided Doe Run Co.'s Engineer prior to placement of any materials. At the discretion of the Engineer test cores may be required to verify asphalt mix and proper physical installation.

4. All surface, intermediate, and base asphalt concrete pavement shall be placed a maximum thickness of 1 ½" compressed thickness per lift. Multiple lifts shall be used to achieve the required pavement thickness.

5. Asphalt pavement shall be placed such that storm water will be controlled on Doe Run Co.'s property as called for in the design documents. Any discrepancy that the contractor finds, or inadvertently creates, which is not good general practice for water control shall be resolved to the satisfaction of the Engineer.

6. Reinforced Concrete Construction: All concrete shall have a minimum of 4000. psi strength at 28 days. Reinforcement steel shall conform to ASTM A615 Gr 60 UNO. All fill or backfill shall be placed in lifts not more than 8" each lift and shall be compacted to a minimum of 95% of the maximum dry density as determined in accordance with the latest edition of ASTM D698.

7. Construction Reference drawings include:

   - 93022 Facility Drawing
   - 98030 South End Storage Plan
   - 98040 South End – Drying Bins Plan
   - 78D250 Strip Plant Footing Plan

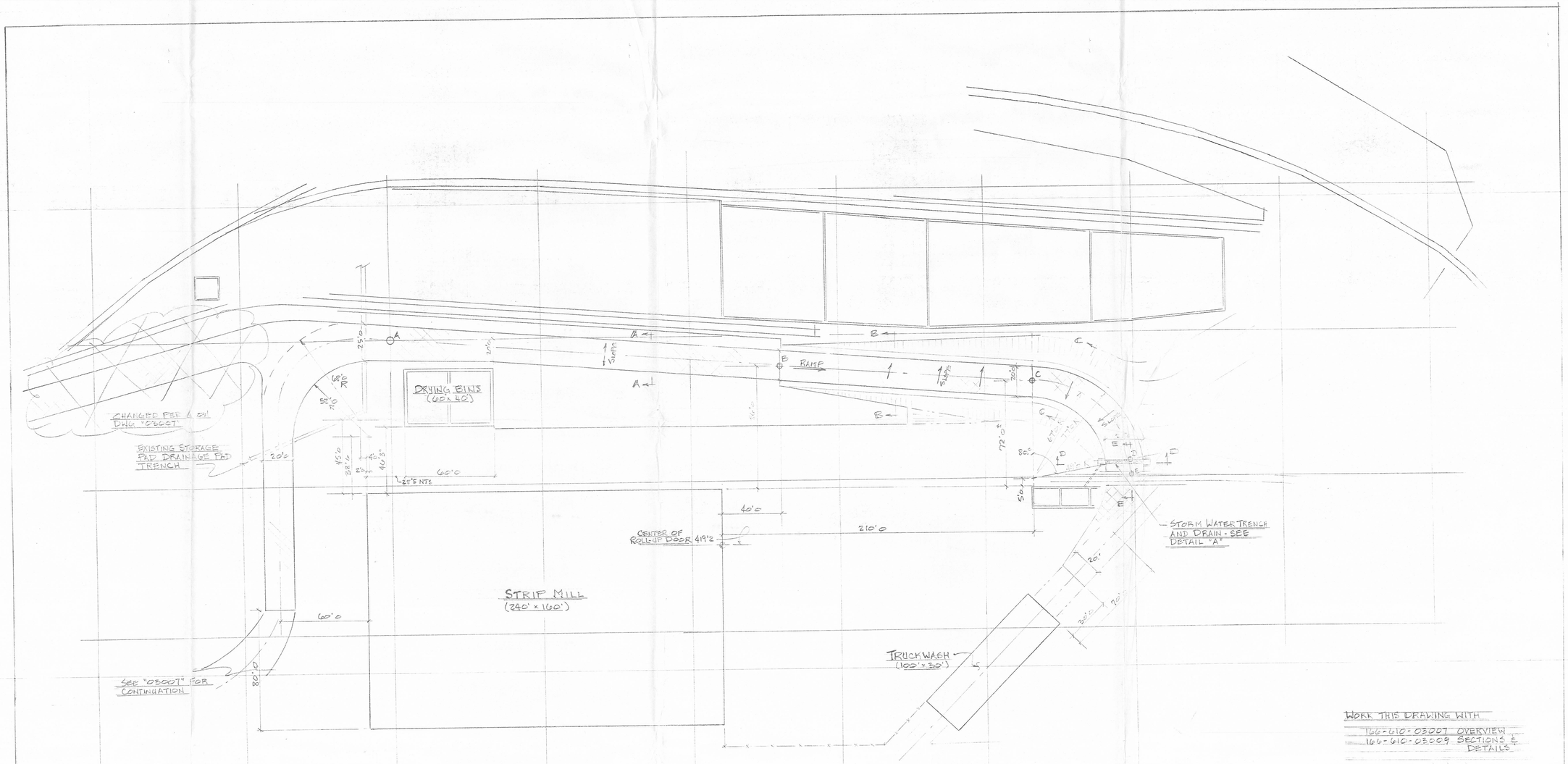
⚠ INTERNAL ROAD RELOCATED WEST OF E.S. ACID STORAGE TANK AS SHOWN. USE LATEST SURVEYOR WORK POINTS TO LOCATE FINAL POSITION OF ROAD & RAMP AT SOUTH END ENTRANT TO TRUCKWASH. JHS 9/20/05

THE DOE RUN COMPANY
881 MAIN ST., HERCULANEUM, MO. 63048

PLANT ROADWAY
"INTERNAL" SOUTH END
OVERVIEW & SPECIFICATIONS

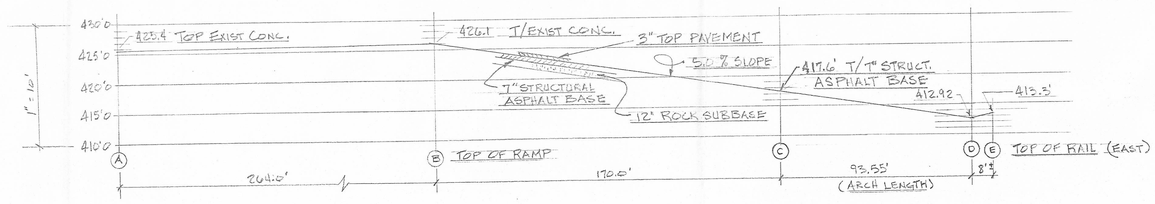
SCALE	DRAWN BY:	CHECKED BY:	JOB NO.
1:100 IN. = 1 FT.	D.BAILEY DATE: 7-24-03	DATE:	

DWG. NO. 166-610-03007-1



WORK THIS DRAWING WITH

166-610-03007 OVERVIEW
166-610-03009 SECTIONS & DETAILS

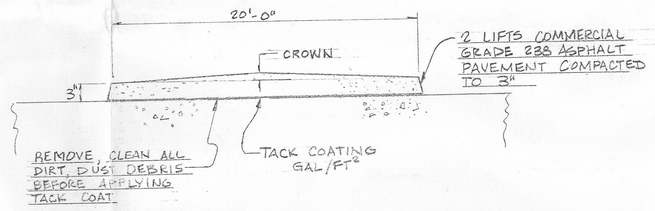


THE DOE RUN COMPANY
881 MAIN ST., HERCULANEUM, MO. 63048

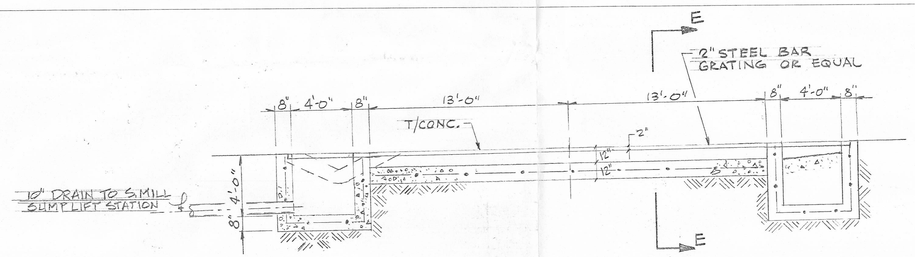
PLANT ROADWAY
"INTERNAL" SOUTH-END
PLAN

SCALE	DRAWN BY:	CHECKED BY:	JOB NO.
1"=30' IN. = 1 FT.	D. BAILEY DATE: 7-24-05	DATE:	

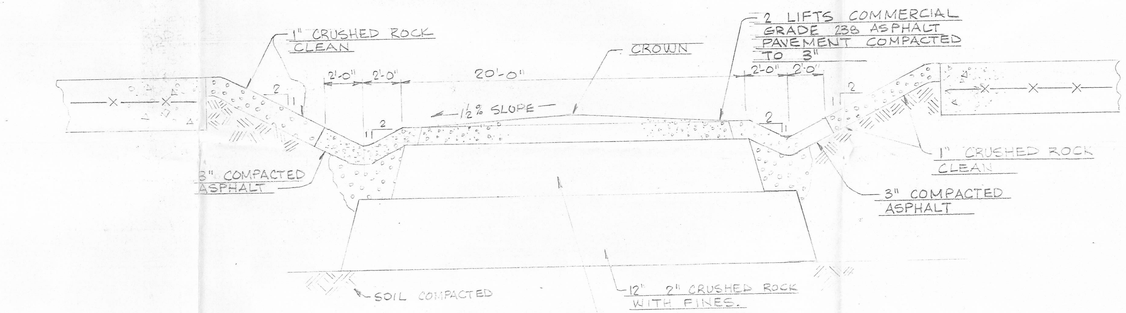
DWG. NO. 166-610-03008



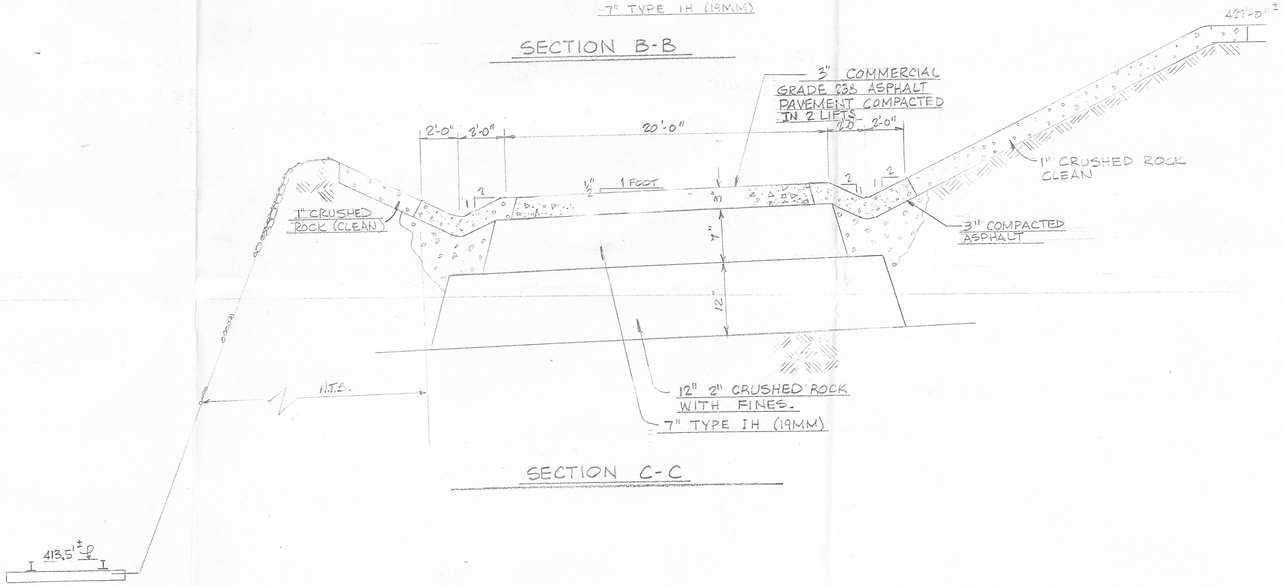
SECTION A-A



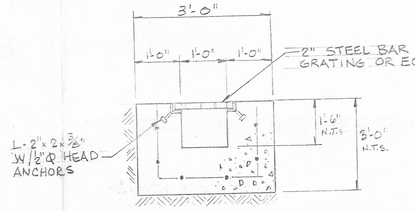
SECTION D-D



SECTION B-B



SECTION C-C



SECTION E-E

WORK THIS DRAWING

166-610-03007 OVERVIEW
166-610-03008 ROADWAY PLAN

THE DOE RUN COMPANY
881 MAIN ST., HERCULANEUM, MO. 63048

PLANT ROADWAY
"INTERNAL" SOUTH END
SECTIONS AND DETAILS

SCALE	DRAWN BY:	CHECKED BY:	JOB NO.
NTS IN. = 1 FT.	D. BAILEY DATE: 7-24-03	DATE:	

DWG. NO. 166-610-03009-A